TOOELE ARMY DEPOT

Tooele, Utah

Monitoring Well D-17 Completion Report Phase II RFI Groundwater Investigation

Contract Number: GS-10F-0179J

Submitted to:

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Sacramento District

February 2006

Prepared by:

PARSONS and KLEINFELDER

Salt Lake City, Utah

MONITORING WELL D-17 COMPLETION REPORT
PHASE II RFI GROUNDWATER INVESTIGATION
TOOELE ARMY DEPOT
TOOELE, UTAH

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ABBREVIATIONS AND ACRONYMS

µg/L ..... micrograms per liter
API ..... American Petroleum Institute
ASTM ..... American Society for Testing Materials
bgs ..... below ground surface
btoc ..... below top of casing
CTC ..... carbon tetrachloride
EPA ..... Environmental Protection Agency
gpm ..... gallon per minute
IWL ..... Industrial Wastewater Lagoon
MCL ..... maximum contaminant limit
NAD ..... North American Datum
NEB ..... Northeastern Boundary Plume
NGVD ..... National Geodetic Vertical Datum
NTU ..... nephelometric turbidity unit
NPL ..... National Priorities List
PDB ..... passive diffusion bag
PID ..... photoionization detector
ppm ..... parts per million
PVC ..... polyvinyl chloride
RCRA ..... Resource Conservation and Recovery Act
RFI ..... RCRA Facility Investigation
RL ..... reporting limit
STL ..... Severn Trent Laboratories
SWMU ..... Solid Waste Management Unit
TCE ..... trichloroethene
TEAD ..... Tooele Army Depot
UAC ..... Utah Administrative Code
UDEQ ..... Utah Department of Environmental Quality
UID ..... Utah Industrial Depot
USACE ..... United States Army Corps of Engineers
USCS ..... Unified Soil Classification System
VOA ..... volatile organic analysis
VOC ..... volatile organic compound

1. INTRODUCTION

This report contains detailed information regarding the drilling, construction, development, and sampling of groundwater monitoring well D-17, located northeast of the Tooele Army Depot, Utah (TEAD). This report was prepared for the US Army Corps of Engineers (USACE), Sacramento District, under Contract GS-10F-0179J, on behalf of TEAD by Kleinfelder, Inc., (Kleinfelder) and Parsons in Salt Lake City, Utah.

TEAD is an active military facility located approximately 35 miles southwest of Salt Lake City, Utah (Figure 1.1) and it has been in operation since 1942. TEAD has been a primary storage, maintenance, and disposal facility for conventional munitions since its inception. Due to impacts to groundwater quality resulting from this activity, TEAD was added to the National Priorities List (NPL) under the federal Superfund program in October 1990.

1.1 BACKGROUND INFORMATION

Historical wastewater discharged to the unlined Industrial Wastewater Lagoon (IWL) at TEAD resulted in a large impacted groundwater plume beneath the eastern portion of the Depot. A large number of monitoring wells, piezometers, extraction wells, and injection wells have defined a trichloroethene (TCE) plume along downgradient, northern, and western extremes of the Depot. This occurrence of impacted groundwater was designated the Main Plume.

In 1986, TCE was detected in an off-site production well located north of the Industrial Area, approximately 5,000 feet northeast of the IWL. In 1994, well C-10 was installed at the northeastern boundary of the Depot. TCE was detected at a concentration of approximately 240 micrograms per liter (µg/L) in groundwater sampled from well C-10, located directly across the road from the impacted off-site production well (Kleinfelder, 1998).

Additional groundwater investigations were conducted to further assess the nature and extent of groundwater contamination at the northeastern boundary of TEAD. These additional investigations indicated that the contamination in well C-10 and the adjacent off-site production well had likely originated from a source different from that attributed to the Main TCE plume. Thus, two plumes of groundwater contamination were indicated. This second, more easterly plume, was designated the Northeastern Boundary (NEB) Plume. The oil-water separator at Building 679 in the former industrial area (now the privately owned Utah Industrial Depot [UID]) was identified as a major source of this plume (Kleinfelder, 2002).

A subsequent investigation was designed to define the approximate off-site extent of the NEB Plume. The plume, which is relatively narrow beneath the former industrial area, extends

approximately 16,000 feet (ft) downgradient (to the north) from the identified source at Building 679 (Parsons, 2003a). The installation of groundwater monitoring well D-17 was conducted in accordance with the Phase II Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Solid Waste Management Unit (SWMU) 58 Work Plan (Parsons, 2003b) and Work Plan Sampling and Analysis Plan Addendum 1 (Parsons, 2004) that were approved by the USACE and the State of Utah Department of Environmental Quality (UDEQ) prior to initiating fieldwork.

1.2 PROJECT PURPOSE AND SCOPE

Monitoring well D-17 is one of fifteen groundwater monitoring wells installed between September 2004 and September 2005 during the Phase II RFI at SWMU 58. SWMU 58 encompasses the source areas and the areas impacted by the Main and NEB TCE Plume. Objectives of the groundwater investigative component of the Phase II RFI are to:

- Refine the vertical limits and lateral extent of the Main and NEB chlorinated solvent plumes;
- Further characterize the distribution of contaminants within the plumes;
- Ascertain whether there are additional contaminant sources to the NEB Plume and assess their impacts to groundwater;
- Assess the risks to human health associated with the unmanaged (off-site) portion of the NEB Plume; and
- Refine the existing numerical groundwater flow and solute transport models with respect to fate and transport, in order to better predict the potential extent (stability) of the plume in the future.

Investigative efforts described in this completion report were supervised by a State of Utah-registered Kleinfelder geologist who was present for critical on-site activities. Before drilling began, a land lease (access and well easement agreement) was negotiated with the property owner, Perry/Tooele Associates, LLC, and a permit for well installation was obtained from the State of Utah Division of Water Rights (DWR). Copies of the lease agreement, the Parsons "request for authorization to drill" and DWR "authorization" letters, Applicant Start Card, and Driller (Start) Card are included in Appendix A. Underground utility clearance was obtained through the Blue Stakes Location Center.

To minimize the danger of wildfire due to drilling activities, Parsons personnel cut the cheat grass within a 75 foot radius around the well site, and also along the access routes to the proposed well. During drilling a 750-gallon capacity water buffalo was stationed adjacent to the drill rig, in the event that a fire did accidentally start.

Monitoring well D-17 was drilled, constructed, developed, and sampled between June 28, 2005, and July 14, 2005. Drilling and construction activities were conducted by Layne Geoconstruction (Layne) of Salt Lake City, Utah. Following completion of the well, Layne issued a Well Driller's Report, which is also included in Appendix A. Well development and groundwater sampling were completed by Veolia Water North American Operating Services, LLC, which operates the groundwater treatment plant at TEAD. Laboratory analyses were provided by Severn Trent Laboratories (STL) of West Sacramento, California, a State of Utah, and a USACE-certified analytical laboratory. Down-hole geophysical logging was performed by RAS, Inc. of Golden, Colorado. Transport of suspect hazardous drill cuttings and potentially impacted groundwater generated during drilling and well development to the UID 90-day yard was provided by MP Environmental of Grantsville, Utah.

Monitoring well D-17 is located in the SE ¼ of Section 6, T3S, R4W, Salt Lake Base and Meridian. This well is accessed from Sheep Lane along the abandoned railroad grade, and then via a dirt/gravel road that accesses monitoring wells D-03, then northeastward along a dirt track to well D-07, then northwestward to wells D-19, D-18, and D-17. The well can also be reached from the north via 1200 West from Erda Way. However, this route requires accessing two locked gates, one across and one adjacent to 1200 West, that are controlled by Tooele Associates. Monitoring well D-17 was installed primarily to serve as a sentinel well along the northeast margin of the NEB Plume. Note that monitoring wells D-18 and D-19 to the south were installed to define the approximate boundary of the NEB Plume based on the 5 µg/L TCE isoconcentration contour. A secondary objective of this and other sentinel wells that have been installed along the northeastern and eastern margins of the NEB plume was to better define regional groundwater flow (Parsons, 2003b).

2. DRILLING, SEDIMENT SAMPLING, AND LOGGING METHODS

2.1 DRILLING

Groundwater monitoring well D-17 was drilled by Layne Geoconstruction of Salt Lake City, Utah, on June 28 and June 29, 2005 using a Becker AP-1000 percussion hammer drilling rig manufactured by Drill Systems. The AP-1000 advances a dual-walled 10-inch diameter drill pipe into the subsurface by means of a diesel-powered pile hammer. Circulating air is pumped down the space between the inner and outer walls of the drill rod to the drill bit, where formation cuttings are picked up and carried back through the center of the drill rod and out of the borehole as the air returns to the ground surface. Cuttings are separated from the discharging air by a cyclone. Dry cuttings were collected and spread on the ground around the well site, whereas saturated cuttings were contained in 55-gallon drums pending analytical results.

2.2 SAMPLING OF DRILL CUTTINGS

Cuttings were observed continuously as they discharged from the cyclone and were collected in 1-quart bags and chip trays. The cuttings were logged at 5-foot intervals or when significant changes in lithology occurred. Drive sampling, used in previous boreholes drilled as part of this program, was rarely successful due to refusal in coarse sediments and inability to anticipate encountering thin, fine-grained layers. Thus, a more accurate and complete borehole log resulted from continuous observation of cuttings from the cyclone.

Drill cuttings were logged using the American Society for Testing Materials (ASTM) Method D2488-00. The Unified Soil Classification System (USCS) was used for designating the various types of unconsolidated material encountered. Where a conflict between the two methods was identified, the ASTM convention took precedence. Color of the drill cuttings (when wetted) was noted by referencing the Munsell color chart system. Estimated percentages of gravel, sands, and fines; degree of roundness and lithology/mineralogy of any gravel clasts; moisture content; degree of cementation; and any other notable attributes were routinely recorded in the sample description. The Becker Hammer Drilling method allows for a maximum clast size of about 6 inches to pass through the drill pipe to the surface, so while boulders and cobbles exceeding this dimension may exist, their percentages cannot be estimated.

Grab samples of drill cuttings from below the saturated zone were logged and screened for volatile organic compounds (VOCs) using a photoionization detector (PID). PID readings were also included on the boring log. PID readings from the grab samples from this boring ranged from 0.0 to 1.1 parts per million (ppm). A composite of these samples was submitted for VOC analysis, which was used to determine the proper means of disposal for all saturated cuttings

from this borehole. Saturated drill cuttings were containerized in 55-gallon drums and transported to the UID 90-day yard to await analysis.

2.3 RECORD KEEPING

While on site, Kleinfelder's geologist maintained records of all activities in a bound field logbook, on Daily Field Report forms, Drill Rig Inspection forms, Safety Meeting Forms, and Equipment Calibration Logs. Copies of these records are presented in Appendix B.

3. SUMMARY OF SUBSURFACE CONDITIONS

3.1 GEOLOGIC LOG

A Kleinfelder geologist was on-site during to collect samples of drill cuttings in order to maintain a continuous geologic log of the subsurface conditions that were encountered. Lithologic descriptions and the geologist's observations were entered onto the geologic log. The geologic log of the cuttings that were sampled during drilling of the monitoring well D-17 borehole is included in Appendix C.

The geologic log indicates that the upper 24 feet of the boring was drilled in a distinctive silt (ML) unit, with minor clay and sand, which is thought to be of lacustrine origin. These sediments are conjectured to have been deposited by Lake Bonneville. A silt unit of similar thickness and virtually identical appearance and character was encountered over the same elevations in nearby wells D-9 (35 feet), D-8 (19 feet), and D-10 (23 feet) during the Phase I RFI, and in D-18 (20+ feet) during this investigation.

In D-17 and other wells, the aforementioned silt unit has a sharp lower contact with the underlying well-graded gravel with sand and silt (GW-GM) unit. The older, pre-Lake Bonneville sediments that underlie the lacustrine silt unit in D-17 consist chiefly of well graded gravel with sand and silt, although locally varying amounts of boulders, cobbles, and clay are present. The majority of the coarse-grained sediments consist of sub-rounded to sub-angular clasts of quartzite and limestone that appear water-worn. While some angular clasts are observed, these are likely products of the mechanical breaking caused by the drilling method. The coarser-grained sediments (i.e., gravels) are interpreted to have been deposited in a dynamic high energy depositional environment of coalescing alluvial fans. They were encountered throughout the boring to its depth of 150 feet below ground surface (bgs).

Finer-grained and often clay-rich sediments, generally occurring as thin interbeds within the alluvial fan gravels, are interpreted to represent one or more of several types of alluvial fan deposits, including debris flow, stream channel, sheetflood, and sieve, that have been defined (Collinson, 1978) based on depositional process, location on the fan, deposit morphology, degree of sorting and bedding, etc. In D-17, intervals of less permeable fine-grained and/or clay-rich sediments were encountered at depths of 42-44 and 102-126 feet bgs within the alluvial fan gravels. The geologic log indicates no caliche-cemented zones or bedrock was encountered during drilling of monitoring well D-17.

Free water from the cyclone was first observed at approximately 130 feet bgs. Following well construction and development, the depth to water was measured at 110 feet below top of casing (btoc) (106.99 feet bgs) by Veolia Water. It is posited that the clayey gravel unit present from about 110 to 126 feet bgs acted as a semi-confining layer on the regional valley fill aquifer at this

location. (Although the on-site geologist recorded first water at 130 feet bgs, it is likely that the underlying well-graded gravels were saturated to the base of the clayey gravel unit at 126 ft bgs.) Once the lower contact of that unit had been breached, the water level in the well rose to reflect the true head of the potentiometric surface. Perched water was not encountered.

3.2 GEOPHYSICAL LOGS

As a secondary interpretive tool, down-hole geophysical logging of monitoring well D-17 was completed within the polyvinyl chloride (PVC) cased well following construction. Natural gamma ray (gamma) and induction electric (induction) logs were run simultaneously by RAS on December 7, 2004 using a combination gamma ray-induction tool manufactured by Century Geophysical Corporation of Tulsa, Oklahoma. The gamma and induction logs for this well are contained in Appendix C. Data validation was attained via a repeat logging run of a selected stratigraphic interval within the well.

The former logging technique measures the natural gamma emissions emanating from the formation surrounding the borehole. This radiation is released from nuclei of an unstable element decaying to a more stable element. Potassium 40 is the element responsible for most of the gamma radiation detected by the gamma ray probe. This element is very abundant in a number of rock-forming minerals, such as potassium feldspar, that weather to clays. Thorium- and uranium-bearing minerals also produce a gamma ray response, but in most geologic environments, including the unconsolidated valley fill deposits at the project site, the potassium-40 isotope is most abundant. Hence, as the clay content of the sediment increases the gamma ray response also increases. Conversely, the gamma response becomes progressively weaker as the quartz content of the sediment increases. A comparison of this and other monitor well boring logs with their respective gamma ray logs shows a very strong correlation between finer-grained, clay-rich units and gamma ray peaks. Slight offsets between a gamma peak and the location of the fine-grained interval are attributed to an inability to exactly define the depths of unit contacts owing to the time required for the cuttings to travel up the borehole and reach the surface. The measurement scale of the gamma-ray log is in American Petroleum Institute (API) units, accepted as the international reference standard that allows consistent comparisons to be made between a wide variety of gamma-ray counting devices.

The gamma response generally varied from about 90 to 110 API units. A marked exception to this observation was the probable lacustrine silt unit containing trace gravel that was encountered from the surface to about 24 feet. Its average gamma response was about 200 API units, indicating that a significant amount of this fine-grained sediment is actually clay. Gamma peaks ranging from 130 to 195 API units occur at 48, 79, 112, 121, and 127 feet bgs. The peaks at 112, 121, and possibly 127 feet bgs may reflect more clay- or potassic-rich intervals. Note the uneven response for the predominantly clay + gravel unit that was encountered between 102 and

126 feet, suggesting either a variable clay content and/or mineralogy. The remaining gamma highs do not correspond with any fine-grained and/or clay-rich zones identified in the geologic log. These anomalies may represent very thin and possibly discontinuous clay layers within thick gravel intervals. Alternatively, they may be caused by rare gravel clasts of hypabyssal and/or intrusive lithologies that contain potassium-bearing minerals such as biotite and orthoclase. The coarser-grained sediment intervals are generally marked by a relatively uniform gamma response, as might be anticipated.

The induction log measures the conductivity from high frequency alternating currents that are induced into the geologic formation, and is best suited where the formation is characterized by low to medium (less than 50 ohm-meters) resistivity values, the geologic medium exhibits medium to high porosity, and the open borehole was advanced using mud or air as the drilling fluid. Induction logging can be performed in boreholes cased with PVC, but not with steel pipe. Although the induction device measures conductivity, by convention, the conductivity readings are converted to a resistivity curve when plotted on a down-hole log via a simple inverse relationship.

Three curves are shown on the induction logs that were run by RAS. They represent the direct conductivity (millimhos/meter) readings as designated by a dashed ("cond") curve on the plot, a conductivity ("ap-cond") curve designated by a dotted line that has been corrected for the temperature of the induction probe, and resistivity (ohm-meters) measurements derived from a conversion of the temperature-corrected conductivity readings that are depicted as a solid ("res") line on the induction log plot. Note that although the conductivity and resistivity curves appear to mimic one another, the scales for the two properties are reversed since their relationship is an inverse one.

Within the well-graded gravel sections, the induction curves show a very uniform response (12 to 15 ohm-meters for resistivity, and about 60-65 millimhos/meter for temperature-corrected conductivity). The exceptions to this generalization are the silt unit at the top of the well and clayey gravel interval present from about 110 to 126 feet bgs. For the shallow silt interval, resistivity exhibits a very uniform response of approximately 3 ohm-meters, while conductivity varies from about 280 to 360 millimhos/meter. Within the primarily clay+gravel interval at 102-126 ft, the resisitivity response averages about 9 ohm-meters, and the temperature-corrected conductivity about 110-115 millimhos/meter. Minor induction perturbations within the gravel intervals are thought to be due to changes in grain size distribution, clay content, mineralogy, and/or moisture content.

In summary, the geologic borehole log and downhole geophysical logs show good correlation. The three major sediment types identified in this boring: silt with clay, well graded gravel with sand and silt, and clay+gravel each have distinctive induction and gamma log signatures as described above.

3.3 HYDROSTRATIGRAPHIC SECTION

To aid in understanding the subsurface geology and water table configuration in the vicinity of this monitoring well boring, the geologic log for well D-17 was plotted on a straight line cross section (D – D') trending southwest-northeast over a distance of approximately 8,000 feet (Plate C-3). This section is also defined by monitoring wells D-08, D-10, D-18, and D-19 (Plate C-4). Well D-10 is the only well not projected onto the section; the projection distances for the other wells are provided on the cross section.

As discussed in Section 3.1, the upper 24 feet of this borehole encountered a distinctive fine-grained dominantly silty interval of probably lacustrine origin that is correlative with similar sediments in most of the other proximal wells. This unit is shown on the cross section (Plate C-4) as the uppermost (i.e., above an elevation of 4425 feet) fine-grained sediment sequences (depicted by the yellow shading). The sediments below this unit in each well are dominantly of alluvial fan origin. Study of the cross section suggests that the predominantly fine-grained interbeds within the coarse alluvial fan valley fill sediments do not appear to be laterally continuous between the five D-series wells that lie on or have been projected onto Cross Section D - D'. Thus, the correlation of these units from well to well is poor. This is partially due to the substantial distances between wells.

The difficulty in correlating distinct fine-grained units is not surprising, given that the unconsolidated valley fill within SWMU-58 was largely deposited in a dynamic high-energy depositional environment of coalescing alluvial fans. Fine-grained units deposited under such conditions are characterized by limited thickness and areal extent, and this also appears to hold true for the project area. Many of the fine-grained silt- and/or clay-rich intervals pinch out over a few hundred feet due to a change in the depositional environment.

Another agent responsible for limited areal extent is post-depositional erosion and sediment reworking. Channel erosion is strongly suspected of causing the substantial difference in the thickness of a clay-rich lacustrine or floodplain deposit encountered in two closely space borings at Building 600 in UID. It almost certainly has been operative elsewhere.

There is another factor that may frustrate correlation of fine-grained units in this and other Phase II RFI groundwater monitoring wells. Most of these fine-grained units, even if they exhibit some lateral extent, were generally deposited on alluvial fan surfaces that are inclined several degrees or more. Over a distance of just a few hundred feet a dip of even a few degrees translates into a change in elevation of up to 10 feet or more. Moreover, for monitoring wells spaced a thousand feet or greater, which is not atypical for the groundwater monitoring array at TEAD, differences in the elevation of a laterally continuous unit could be on the order of several tens of feet.

As per the fine-grained units, little success has been achieved attempting to correlate caliche-cemented zones that occur primarily in the gravels. The same general comments presented above for fine-grained sediment deposits also apply to correlation of cemented zones. The ability to correlate both fine-grained sediment units and cemented zones between monitoring wells in the project area may be contingent upon distinct downhole gamma and induction electric log signatures.

4. WELL CONSTRUCTION SUMMARY

4.1 CONSTRUCTION TECHNIQUES AND MATERIALS

During drilling of monitoring well D-17, the 10-inch Becker Hammer drive casing was advanced to a depth of approximately 150 feet. Well construction occurred on July 1, 2005 inside the cased borehole. Two 10-foot sections of threaded, 4-inch diameter Schedule 40 PVC well screen with 0.010-inch wide slots and 13 10-foot sections of 4-inch diameter Schedule 40 PVC blank casing were assembled and lowered inside the drive casing to the bottom of the borehole. The screen extends from 129 feet to 149 feet bgs, and coincides with the well-graded gravel with sand (GW) unit that lies immediately below the semi-confining clayey gravel (GC) unit (110-126 ft bgs). The well riser consists of 3.01 feet of aboveground blank well casing.

Silica sand (16-40) was added to the annulus between the PVC and the borehole in the interval adjacent to the well screen. To help minimize the risk of bridging and to confirm that the correct volume of sand was added, the sand was poured slowly into the annulus from the surface and continuously monitored until the top of the sand interval was approximately 2 feet above the top of the screen. The sand-pack interval was isolated from upper portions of the borehole with a 4-foot thick seal of bentonite clay pellets. The remaining annulus above the bentonite clay pellets was grouted to approximately 30 inches bgs with 30 percent solids bentonite slurry in accordance with Utah Administrative Code (UAC) R655-4-9.4.2. Following completion, the bottom of the well was tagged at a depth of 149.97 feet bgs. A well construction diagram is provided in Appendix D.

4.2 SURFACE COMPLETION AND SURVEY COORDINATES

A locking, 6-foot long, 10-inch diameter protective casing was placed around the uppermost part of the monitoring well casing, with approximately 3 feet above and 3 feet below ground. Concrete was used to partially fill and anchor the protective casing, fill the upper 5 feet of the borehole annulus, and build a 3-foot square by 1-foot thick pad (6 inches above ground surface) around the finished well. The concrete pad was finished to slope away from the protective casing and was embedded with a brass survey monument.

Four 4-inch diameter steel bollards were positioned around the pad to protect it from vehicular traffic. The bollards stand approximately 4 feet above the ground surface and extend about 2 feet bgs into concrete-filled post holes.

Ward Engineering Group of Salt Lake City, Utah, surveyed the well on July 29, 2005. Coordinates for the well locations are referenced to the North American Datum (NAD) 1983

Utah State Plane Central Zone and the elevation to the National Geodetic Vertical Datum (NGVD) 1929. Survey data are included in Appendix D.

5. WELL DEVELOPMENT

Groundwater monitoring well D-17 was developed using swabbing, bailing, and pumping methods on July 13 and 14, 2004. Development continued for approximately 5 hours and 46 minutes until the turbidity of the water produced was less than five nephelometric turbidity units (NTUs). All development water was collected and contained for later disposal pending analytical results (see Section 7.3). Well development records are included in Appendix E.

5.1 SWABBING AND BAILING

Swabbing and bailing took place for 2 hours and 35 minutes. Swabbing was done with a loose fitting surge block with an oversized rubber disk, slightly smaller than the inner diameter of the screen. Periodic measurements of pH, temperature, electrical conductivity, turbidity, and comments regarding the appearance of discharge water were recorded on well development records (Appendix E). About 120 gallons of water were removed from well D-17 by bailing during development.

5.2 PUMPING

After swabbing and bailing the well, development was completed using an electric submersible pump. The pump was lowered to the bottom of the screened interval and operated intermittently at rates ranging from 11.01 to 11.32 gallons per minute (gpm) for 3 hours and 11 minutes. During development pumping, the pump was periodically shut off, and the water in the discharge piping was allowed to back-flush (surge) into the well. Pumping and periodic back-flush surging was continued until there was no noticeable increase in the discharge water turbidity. Periodic measurements of pH, temperature, electrical conductivity, turbidity, and comments regarding the appearance of discharge water were recorded on well development records. An estimated 1,056 gallons of groundwater were removed by development pumping. The final turbidity was measured at 1.51 NTU.

A drawdown-recovery test was performed during the pumping portion of the development of D-17 (Appendix E). A maximum drawdown of 0.20 feet was recorded after one minute of pumping at 11.07 gpm. Recovery to the original (pre-pumping) water level took three minutes. The limited drawdown and the very short pumping time (~1 minute) required to reach steady state indicate that the formation at the pump intake (~149 ft bgs), a well graded gravel with sand, has an elevated hydraulic conductivity as would be expected.

6. GROUNDWATER SAMPLING

6.1 SAMPLING METHODOLOGY

Monitoring well D-17 was sampled using passive diffusion bag (PDB) sampling techniques. PDB sampling is performed without purging and involves lowering a polypropylene bag filled with distilled water to a predetermined depth. Once in place, the water within the PDB sampler is allowed to equilibrate with the surrounding groundwater for 2 weeks. During this time, VOCs diffuse into the distilled water. The PDB sampler is then removed from the well and water is transferred into three pre-preserved 40 mL volatile organic analysis (VOA) vials.

Because monitoring well D-17 was installed as a sentinel well and no detectable VOCs were anticipated in groundwater at this site, only a single PDB sampler was placed in monitoring well D-17, at a depth of 143 feet btoc (140 feet bgs) on September 15, 2005. The depth marks the approximate mid-point of the screened interval. The PDB sampler was retrieved from well D-17 and sampled on October 4, 2005. The single groundwater sample collected from that sampler was assigned sample identifier D-17GW00l.

After the sample containers were filled, they were placed into an ice-chilled cooler and shipped overnight to STL, a State of Utah and USACE-certified analytical laboratory, for VOC analysis. Chain-of-custody forms were filled out and used to document the sampling dates, analytical parameters requested, and proper sample handling. Completed chain-of-custody forms and cooler receipt forms are included in Appendix F.

6.2 GROUNDWATER ANALYTICAL RESULTS

The single groundwater sample collected from monitoring well D-17 was analyzed for VOCs using US Environmental Protection Agency (USEPA) Method 8260B. Three VOC analytes were detected in samples from this well. Only TCE was above the reporting limit (RL) at 3.8 µg/L. Carbon tetrachloride (CTC) and chloroform were also detected below the RL. The sampling results from monitoring well D-17 are summarized in Table 1, and include the USEPA Federal Maximum Contaminant Level (MCL) as a basis of comparison. Laboratory reports for the groundwater analysis from D-17 are included in Appendix F.

The presence of almost 4 µg/L TCE in this well was not anticipated. Assuming that this result is verified during the next sampling event, the MCL for TCE (5 µg/L) could be reached within the next year of monitoring. The Phase II RFI Work Plan (Parsons, 2003, p. 4-57) requires that any TCE analytical results that exceed the action level (MCL) will require confirmation through an additional sampling event. If the concentration is reconfirmed to exceed the MCL, one or more additional sentinel wells would be installed. The TCE concentration of 3.8 µg/L for well D-17 is

consistent with the values of 3.8-5.0 µg/L and 5.9-6.6 µg/L reported for upgradient monitoring well D-18 and crossgradient well D-19, respectively.

TABLE 1

SUMMARY OF LABORATORY RESULTS

TOOELE ARMY DEPOT, UTAH

Analyte	Federal MCL (µg/L) 95 40CFR 141.11, 141.12, 141.61, & 141.62	Analytical Results (µg/L)
Sample Number & Depth		**D-17GW001 (140 feet)**
1,1,1 Trichloroethane	200	ND
1,1,2 Thrichloroethane	5	ND
1,1 Dichloroethane	5	ND
1,1 Dichloroethene		ND
1,2 Dichloroethane	5	ND
1,2 Dichloropropane	5	ND
Benzene	5	ND
Carbon tetrachloride	5	0.43J
Chloroethane		ND
Chloroform	100	0.18J
cis 1,2 Dichloroethene		ND
Ethylbenzene	700	ND
m,p Xylene	10,000	ND
Methylene chloride	3	ND
Naphthalene		ND
o Xylene	10,000	ND
Tetrachloroethene		ND
Toluene	1,000	ND
trans 1,2 Dichloroethene		ND
Trichloroethene	5	3.8
Vinyl chloride	2	ND

J = Estimated Result. Result is less than reporting limit.

7. INSTALLATION RESTORATION WASTE

7.1 DECONTAMINATION METHODS

To help minimize the chance that non-dedicated equipment could cross-contaminate groundwater or sediment at well D-17, a rigorous decontamination program was followed. A decontamination station was constructed in the temporary UID RCRA 90-day yard (located south of Building 614) that could accommodate the drill rig, drill pipe, and other equipment as needed. Decontamination of equipment was conducted with approved water from TEAD production well WW-3 using a steam cleaner/high-pressure washer. Equipment wash and rinse water was contained in a sump at the west end of the decontamination pad, and then pumped to a Baker Tank (Parsons container # PARSNZ0518101) labeled as hazardous waste in the UID 90-day yard. That waste remained in the Baker Tank, where it was commingled with water from similar waste streams.

7.2 DISPOSAL OF DRILL CUTTINGS

Drill cuttings in the unsaturated zone were collected below the cyclone in a wheelbarrow and spread evenly on the ground around the well site. Once groundwater was encountered, saturated cuttings and any free groundwater were containerized in 55-gallon drums and transported to the UID 90-day yard via Uniform Hazardous Waste Manifest P5007 by MP Environmental Services. A saturated sample was collected every 5 feet and, upon completion of the borehole, these samples were composited to a single sample and submitted to the laboratory for analysis of VOCs. Lab results indicated VOCs were not detected in the cuttings from well D-17. Following TEAD approval, the cuttings were returned to the site of D-17 and spread evenly on the ground surface. A copy of the laboratory results is included in Appendix G.

7.3 DISPOSAL OF WASTEWATER

Water derived from the development of well D-17, including equipment rinse water, was transported from the well site to the UID temporary 90-day yard via Uniform Hazardous Waste Manifest P5010 by MP Environmental Services, utilizing a 5,000 gallon capacity tanker truck, and pumped into a 6,500 gallon capacity frac (Baker) tank (Parsons container # PARSNZ0518101).

Eventually drilling, development, and equipment rinse water derived from nearby wells D-18 and D-19 was added to and commingled with the wastewater associated with D-17. Commingling of the waste streams from these wells was justified because these three D-series wells lie on the perimeter of the NEB Plume. Based on the assumption that they should exhibit

similar (low) concentrations of the same VOC analytes, the waste characteristics for each of the three well waste streams should likewise be very similar.

After development and decontamination water from wells D-18 and D-19 were added to the tank, the container was closed and sampled to determine the most suitable disposal option. Sample IDW57 contained 0.41 µg/L TCE, 0.18 µg/L chloroform, and 0.35 µg/L CTC. The waste was coded as F001 and F002 hazardous. Based on this analysis, the water met the requirements for processing at the TEAD Groundwater Treatment Plant (GWTP), and this disposal option was recommended to TEAD. A copy of the disposal memo is included in Appendix H. Following authorization by TEAD, the waste was transferred to the TEAD groundwater treatment plant on September 18, 2005, via a 5,000-gallon capacity tanker provided by MP Environmental.

8. REFERENCES

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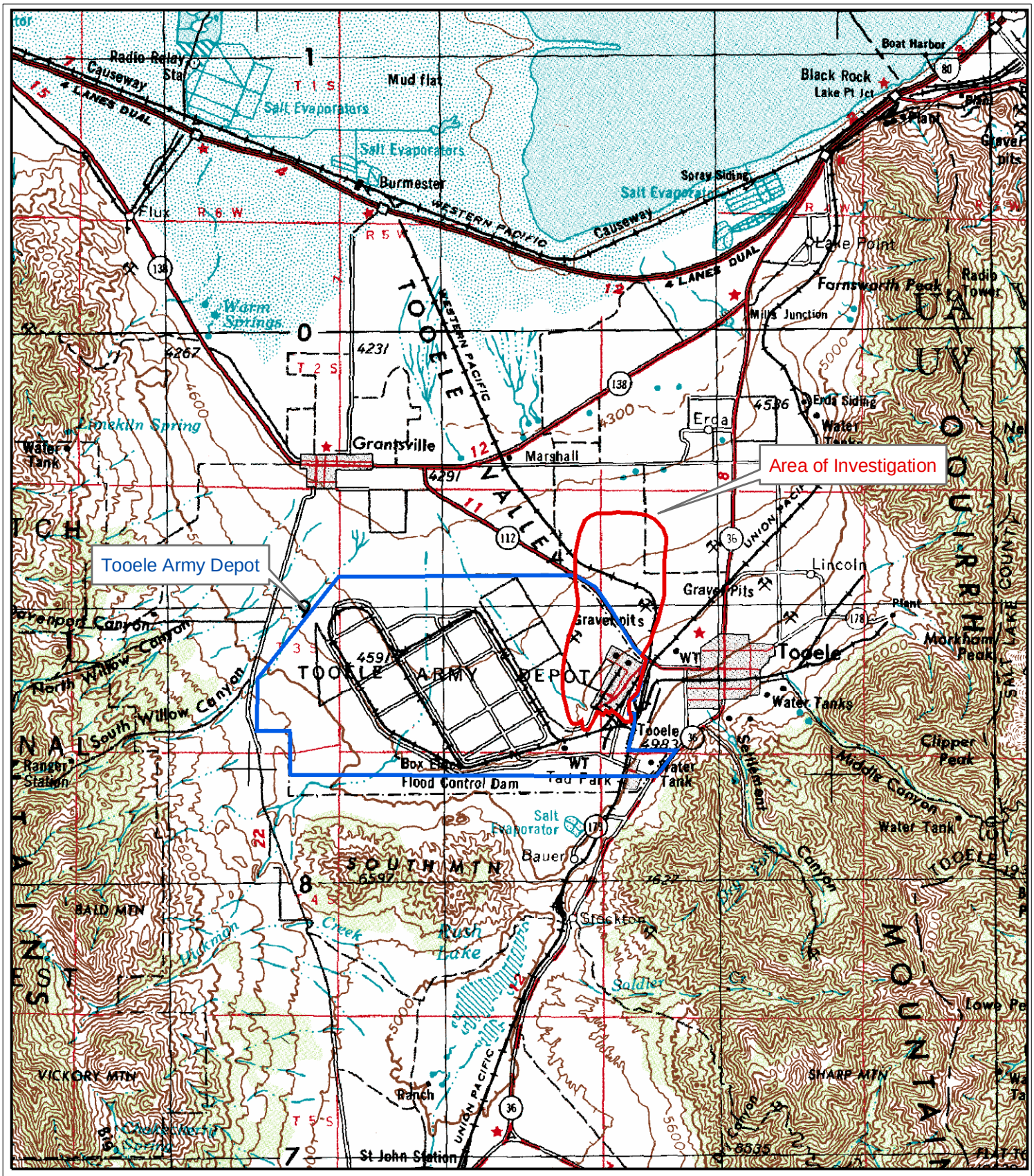
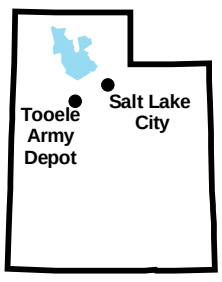
Welenco. 1996. Water and Environmental geophysical Well Logs: Volume 1—Technical Information and Data, 8th edition.



LEGEND

- Installation Boundary
- Investigation Boundary

Source: USGS Tooele, Utah 1 x 2 Quadrangle, 1970



SWMU 58
PHASE II RFI
TOOELE ARMY DEPOT
TOOELE, UTAH

0 1 2 3 Miles

N

FIGURE 1.1
SITE LOCATION MAP

w:\tooele\maps\well_comp_report_sept2005\Loc_Map.mxd 11/28/05

PARSONS

APPENDIX A

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS

PROJECT: Tooele Army Depot
Groundwater Monitoring Wells

LAND LEASE

BETWEEN

PERRY/TOOELE ASSOCIATES, LLC

AND

THE UNITED STATES OF AMERICA

THIS LEASE, made and entered into this 28th day of April, 2005, by and between Perry/Tooele Associates, Limited Partners, whose address is 416 W. 2000 North, Tooele, Utah 84074 and whose interest in the property hereinafter described is that of owner for its heirs, executors, administrators, successors, and assigns, hereinafter called Lessor, and THE UNITED STATES OF AMERICA, hereinafter called the Government:

WHEREAS, Tooele Army Depot was placed on the Environmental Protection Administration's (EPA) National Priorities List in October 1990. Several known and potential waste sites on the installation were designated as sites for environmental study and possible cleanup under Comprehensive Environmental Response, Compensation & Liability Act, in accordance with a 1991 agreement between the Army, the EPA, and the Utah Department of Environmental Quality.

WHEREAS, the Government approached the Lessor for a Right of Entry for the construction and access to groundwater monitoring well, and the Lessor agreed by accepting the Right of Entry on December 12, 2000.

WHEREAS, the Government installed a groundwater monitoring well located on Parcel #3-10-2 (Well #D-8) in December 2000 and by request from the Lessor to decommission the well, the Government abandoned Well #D-8 in February 2003.

4-28-05

WHEREAS, the Government is proposing to lease certain property until final placement of three wells on the Lessor's property is determined and all appropriate information is acquired to make formal offer to purchase easements for all three new well sites.

NOW THEREFORE, the Lessor hereby leases to the Government the following described premises, portions of Parcels #3-10-2 (Well #D-17) and #2-138-2 (Wells #D-18 & #D-19), as shown in Exhibit "A" attached hereto and made a part hereof (hereinafter the Property), to be used for the construction of three groundwater monitoring wells and for monitoring and sampling the groundwater for contaminants.

TO HAVE AND TO HOLD the Property for the term beginning November 1, 2004 through October 31, 2005, provided that unless and until the Government shall give notice of termination in accordance with provision 5 hereof, this Lease shall remain in force thereafter from year to year without further notice; provided further that adequate appropriations are available from year to year for the payment of rentals; and provided further that this Lease shall in no event extend beyond October 31, 2007.

1. Compensation:

a. For use of the Parcel #3-10-2 (Well #D-8) from December 15, 2000 to February 27, 2003, a lump sum of $3,348.43 ($2,904.16 and interest of $444.27). The sum will be paid upon execution of this Lease.

b. Beginning upon execution of this Lease, annual rent of $2,550.00 will be paid in arrears at the rate of $850.00 per annum, per well. Payment shall be made at the end of each fiscal year (30 September), by the U.S. Army Corps of Engineers, Finance and Accounting Office, Special Disbursing Agent, 1325 J Street, Sacramento, California 95814-2922.

c. All compensation paid under this Lease will be credited towards the Government's payment for the compensation agreed upon for the price of the easement.

2. The Government and the Lessor agree to enter into discussions on placement of the three new well sites located on Parcels #3-10-2 (Well #D-17) and #2-138-2 (Wells #D-18 & D-19) as required by the State of Utah. As part of these discussions, the Lessor shall allow the Government and its contractors access to the Property and upon agreement of the sites, this Lease will be amended by Supplemental Agreement to allow for construction of the wells. The Government further agrees upon construction of the wells, it will make an offer to buy a 30-year easement for all three groundwater well sites, prior to the termination of this Lease. Upon execution of an easement, this Lease will terminate.

DRS 4-28-05

3. The Government shall have the right, during the existence of this Lease to attach fixtures, and erect structures or signs, in or upon the Property, which fixtures and structures, or signs so placed in, upon or attached to the Property shall be and remain the property of the Government and may be removed or otherwise disposed of by the Government.

4. The Government has the right of ingress/egress in, on, over, and across said Property for the use by the Government, its representatives, agents, and contractors.

5. The Government may terminate this Lease at any time by giving thirty (30) days notice in writing to the Lessor, and no rental shall accrue after the effective date of termination.

6. Any notice under the terms of this Lease shall be in writing signed by a duly authorized representative of the party giving such notice, and if given by the Government shall be addressed to the Lessor at 416 West 2000 North, Tooele, Utah 84074, and if given by the Lessor, shall be addressed to U.S. Army Corps of Engineers, Real Estate Division, 1325 J Street, Sacramento, California 95814-2922.

7. The Lessor warrants that no person or selling agency has been employed or retained to solicit or secure this Lease upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Lessor for the purpose of securing business. For breach or violation of this warranty the Government shall have the right to annul this Lease without liability or in its discretion to deduct from the Lease price or consideration the full amount of such commission, percentage, brokerage, or contingent fee.

8. No Member of or Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this Lease or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this Lease if made with a corporation for its general benefit.

9.a. The Government may, by written notice to the Lessor, terminate the right of the Lessor to proceed under this Lease if it is found, after notice and hearing, by the Secretary of the Army or his duly authorized representative, that gratuities (in the form of entertainment, gifts, or otherwise) were offered or given by the Lessor, or any agent or representative of the Lessor, to any officer or employee of the Government with a view toward securing a lease or securing favorable treatment with respect to the awarding or amending, or the making of any determinations with respect to the performing, of such lease; provided, that the existence of facts upon which the Secretary of the Army or his duly authorized representative makes such findings shall be in issue and may be reviewed in any competent court.

b. In the event this Lease is terminated as provided in paragraph 9.a hereof, the Government shall be entitled (i) to pursue the same remedies against the Lessor as it could pursue in

MMS 4-28-05

the event of a breach of the Lease by the Lessor, and (ii) as a penalty in addition to any other damages to which it may be entitled by law, to exemplary damages in an amount (as determined by the Secretary of the Army or his duly authorized representative) which shall be not less than three nor more than ten times the costs incurred by the Lessor in providing any such gratuities to any such officer or employee.

c. The rights and remedies of the Government provided in this clause shall not be exclusive and are in addition to any other rights and remedies provided by law or under this Lease.

10. The Lessor agrees that the Comptroller General of the United States or any duly authorized representatives shall, until the expiration of three (3) years after final payment of the agreed rental, have access to and the right to examine any directly pertinent books, documents, papers and records of the Lessor involving transactions related to this Lease.

11. If any action of the Government's employees or agents in the exercise of this Lease results in damage to the real property, the Government will, in its sole discretion, either repair such damage or make an appropriate settlement with the Lessor. In no event shall such repair or settlement exceed the fair market value of the fee title to the real property at the time immediately preceding such damage. The Government's liability under this clause is subject to the availability of appropriations for such payment, and nothing contained in this agreement may be considered as implying that Congress will at a later date appropriate funds sufficient to meet any deficiencies. The provisions of this clause are without prejudice to any rights the Lessor may have to make a claim under applicable laws for any damages other than those provided for herein.

{Signatures to follow.}

DNB
4-28-05

IN WITNESS WHEREOF, the parties hereto have hereunto subscribed their names as of the date first above written.

WITNESS MY HAND this 28th day of April 2005.

PERRY/TOOELE ASSOCIATES, LLC.

Signature: Drew D. Hall

Print Name: DREW D. HALL

ACCEPTED

THE UNITED STATES OF AMERICA

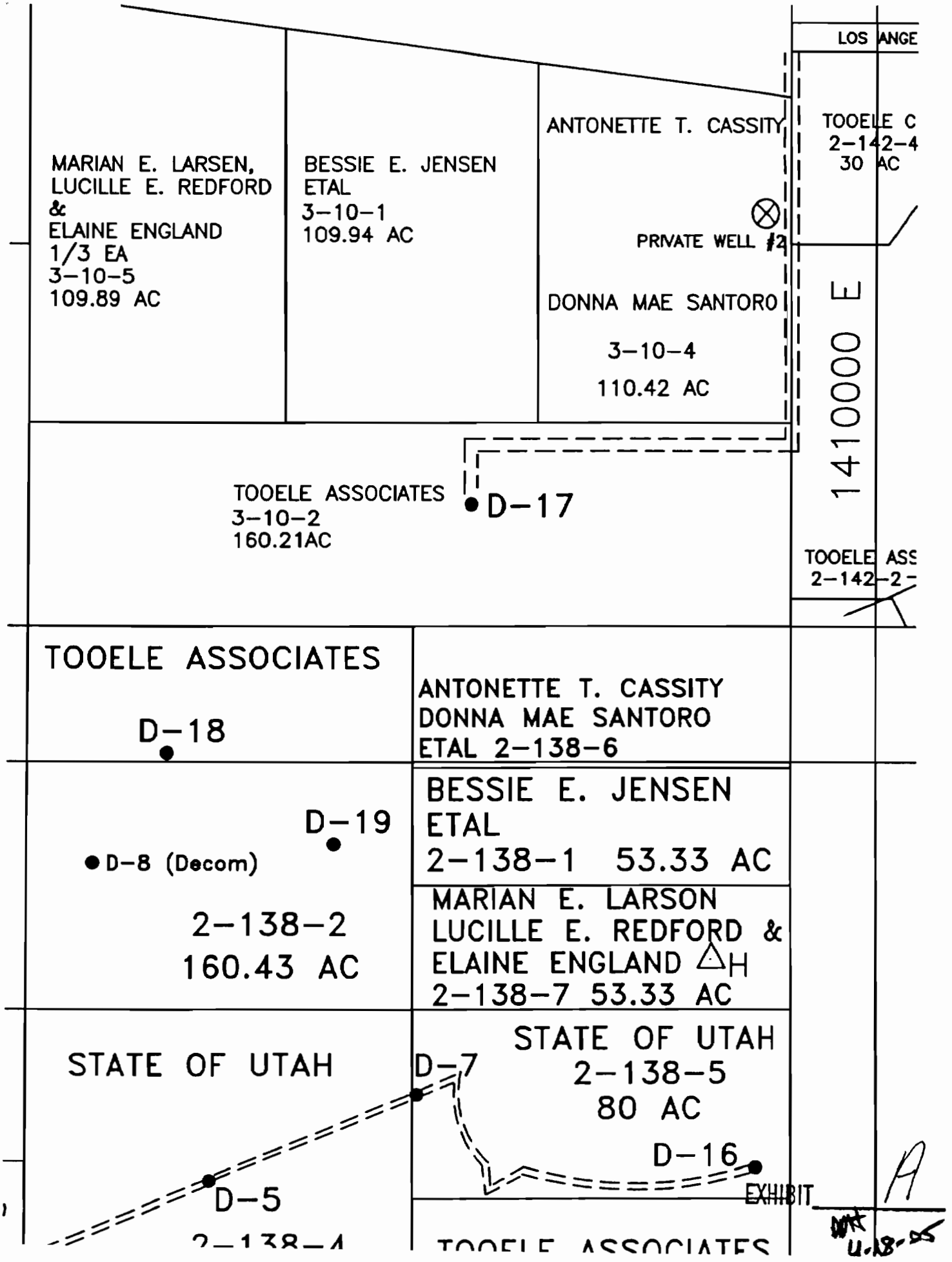
By: for Kim Fox

MARVIN D. FISHER
Chief, Real Estate Division
U.S. Army Engineer District, Sacramento

4-28-05

REVIEWED AS TO FORM AND CONTENT:

ATTORNEY


LOS ANGE
MARIAN E. LARSEN,
LUCILLE E. REDFORD
&
ELAINE ENGLAND
1/3 EA
3-10-5
109.89 AC
BESSIE E. JENSEN
ETAL
3-10-1
109.94 AC
ANTONETTE T. CASSITY
PRIVATE WELL #2
DONNA MAE SANTORO
3-10-4
110.42 AC
TOOELE C
2-142-4
30 AC
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TOOELE ASSOCIATES
3-10-2
160.21AC
D-17
TOOELE ASS
2-142-2
TOOELE ASSOCIATES
D-18
ANTONETTE T. CASSITY
DONNA MAE SANTORO
ETAL 2-138-6
D-19
D-8 (Decom)
2-138-2
160.43 AC
BESSIE E. JENSEN
ETAL
2-138-1 53.33 AC
MARIAN E. LARSON
LUCILLE E. REDFORD &
ELAINE ENGLAND H
2-138-7 53.33 AC
STATE OF UTAH
D-7
STATE OF UTAH
2-138-5
80 AC
D-16
D-5
EXHIBIT
A
TOOELE ASSOCIATES

PARSONS

406 West South Jordan Parkway, Suite 300 • South Jordan, Utah 84095 • (801) 572-5999 • Fax (801) 572-9069 • www.parsons.com

June 2, 2005

State of Utah
Department of Natural Resources
Division of Water Rights
1594 West North Temple
Suite 220
P.O. Box 146300
Salt Lake City, Utah
84114-6300

Attn: Ross Hanson

Subject: Request for authorization to drill groundwater monitoring wells for the Phase II RCRA Facilities Investigation at Tooele Army Depot

Dear Sir:

Parsons, on behalf of Tooele Army Depot (TEAD), requests authorization from the Division of Water Rights (DWR) to drill and install three (3) groundwater monitoring wells in Tooele Valley northeast of TEAD and west of Tooele City (see attached table and map figure). Preparations are in progress to drill these wells starting on or after June 20th and finishing by mid-July, 2005.

All well borings will be advanced by a State of Utah licensed well driller using percussion hammer drilling to a maximum depth of about 210 ft. As per other D-series monitoring wells constructed during this program, wells will be constructed using four (4) inch diameter Schedule 40 PVC, each well will extend approximately 40 ft below the regional water table, and a 20-ft 10- or 20-slot PVC well screen will be installed over the bottom 20 ft.

If you have any questions or concerns please contact me at (801) 572-5999.

Written authorization should be mailed to Larry McFarland, SJMTE-CS-EO, 1 Tooele Army Depot (Building 8), Tooele, Utah 84074. His work phone is (435) 833-3235.

Sincerely,

Richard Jirik

Richard Jirik, R.G., P.G.
Senior Hydrogeologist
Parsons

LOCATION DATA FOR PROPOSED GROUNDWATER MONITORING WELLS D-17, D-18, AND D-19
NORTHEAST BOUNDARY AREA
PHASE II RFI @ SWMU 58, TOOELE ARMY DEPOT

	-proposed well location-		-referenced section corner-		-well location relative to								
Well Identifier	State Plane (northing)	State Plane (easting)	State Plane (northing)	State Plane (easting)	North/South Distance (feet)	East/West Distance (feet)	Section Corner	Section	Township	Range	Base	Diameter (inches)	Est Depth (feet)
D-17	7381795	1407267	7380941	1409417	North 854	West 2150	SE	6	3S	4W	SL	4	170
D-18	7380824	1404691	7380941	1404137	South 117	East 554	NW	7	3S	4W	SL	4	180
D-19	7379877	1406331	7380941	1404137	South 1064	East 2194	NW	7	3S	4W	SL	4	200

The state plane coordinates provided in this table for the proposed monitoring wells were derived from staked locations in the field. Coordinates were provided by Ward Engineering of SLC.

DIVISION OF WATER RIGHTS
REQUEST FOR NON-PRODUCTION WELL CONSTRUCTION
(for wells deeper than 30 feet)

Well Type (check one): Provisional ( ) Monitor (X) Cathodic Protection ( ) Heat Exchange ( )

Applicants Name: TOOELE ARMY DEPOT

Mailing Address: SJMTE-CS-EO 1 TOOELE ARMY DEPOT (BLDG 8)

TOOELE UTAH 84074

Contact Person: MR. LARRY MCFARLAND Phone: (435) 833-3504

Proposed Start Date: 6/22/05 Anticipated Completion Date: 7/25/05

Well Drillers License No: 626 Proposed No. of Wells: 3

PROPOSED LOCATION OF WELLS:

County: TOOELE

NO./SQ. DISTANCE (feet)	EAST/WEST DISTANCE (feet)	SECTION CORNER	SECTION	TOWNSHIP	RANGE	BASE	DIAMETER (inches)	DEPTH (feet)
N1000	W1300	W4	15	2S	1W	SL	2	100

Use back of form or additional paper if more room is needed

EXPLANATORY: REFER TO ACCOMPANYING TABLE FOR INFORMATION ON PROPOSED WELLS LOCATIONS SHOWN ON ENCLOSED FIGURE. ALL WELLS LOCATED OUTSIDE OF THE NORTHEAST BOUNDARY TCE PLUME, AND WILL SERVE IN A SENTINEL CAPACITY.

Richard Jirik (PARSONS) FOR
Signature of Applicant LARRY MCFARLAND (TOOELE ARMY DEPOT)

JUNE 2, 2005
Date

FOR OFFICE USE ONLY

Date of Request: _____ *Approval Date:* _____

Approved by: _____ *Provisional/Monitor Well No.* _____

Water Right Number (if available): _____

cf: File (Restoration) TAT 6/9
Larry McFarland

State of Utah

DEPARTMENT OF NATURAL RESOURCES
Division of Water Rights

JON M. HUNTSMAN, JR.
Governor
GARY R. HERBERT
Lieutenant Governor

MICHAEL R. STYLER
Executive Director

JERRY D. OLDS
State Engineer/Division Director

TOOELE ARMY DEPOT
SJMTE-CS-EO
1 TOOELE ARMY DEPOT BLDG 8
TOOELE, UT 84074

June 7, 2005

Dear Applicant:

RE: MONITOR WELL#: 0515003M00

Reference is made to your request to drill 3 MONITOR WELL(S). The anticipated drilling depths will exceed the minumum regulated and reporting depth of 30 feet, thereby requiring permission from the Division of Water Rights to proceed with this project.

The specifications outlined in your well project request dated June 7, 2005, meet the State Engineer's requirements and permission is **HEREBY GRANTED.** Therefore, this letter is your authorization to proceed with the construction of the well(s) in accordance with those specifications and with respect to the following provisions:

1) Small diameter casing is to be used in the construction of the well(s) and no more water is to be diverted than is necessary to determine the quality of the ground water by obtaining representative samples as required by the project.

2) The well(s) must be drilled by a currently licensed Utah driller and must be drilled in a manner consistent with the recommended construction standards cited in the Utah State Administrative Rules for Well Drillers.

3) The enclosed Driller (START) Card form must be given to the licensed driller for his submittal prior to commencing well construction. The other enclosed form is the 'Applicant Card.' It is **YOUR RESPONSIBILITY** to sign and return this Applicant Card form to our office upon well completion.

4) If complete information is not available in the initial application, it is the **APPLICANT'S RESPONSIBILITY** to provide, upon completion, descriptive locations of the wells referenced by course and distance from established section corners, *e.g. North 565 feet and West 1096 feet from the SE corner of Section 35, T2S, R5W, SLB&M.*

5) At such time as the well(s) are no longer utilized to monitor ground water and the intent of the project is terminated, the well(s) must be temporarily or permanently abandoned in a manner consistent with the Administrative Rules.

NOTE: Please be aware that your permission to proceed with the drilling under this authorization expires December 6, 2005.

Sincerely,

Ross Hansen, P.E.
Regional Engineer

1594 West North Temple, Suite 220, PO Box 146300, Salt Lake City, UT 84114-6300
telephone (801) 538-7240 • facsimile (801) 538-7467 • *www.waterrights.utah.gov*

APPLICANT CARD for Monitor WELL#: 0515003M00

IMPORTANT: THIS CARD MUST BE COMPLETED, SIGNED AND RETURNED BY THE WELL OWNER/APPLICANT AS SOON AS THE WELL IS DRILLED BY A LICENSED UTAH WATER WELL DRILLER.

OWNER/APPLICANT NAME: TOOELE ARMY DEPOT

MAILING ADDRESS: SJMTE-CS-EC, 1 TOOELE ARMY DEPOT BLDG 8, TOOELE, UT 84074

PHONE NUMBER: 435-833-3504

WELL LOCATION: You are authorized to drill 3 Monitor Wells. SEE BELOW.

WELL UTM COORDINATES:

WELL ACTIVITY: NEW (X) REPAIR ( ) REPLACE ( ) ABANDON ( )
CLEAN ( ) DEEPEN ( )

WELL COMPLETION DATE: _____

NAME OF DRILLING COMPANY/LICENSEE: _____

Larry McFarland 6-13-04

Owner/Applicant Signature Date

***COMPLETE, SIGN AND RETURN THIS PORTION UPON FINAL WELL COMPLETION - DO NOT GIVE THIS CARD TO LICENSED WELL DRILLER - YOU MUST RETURN IT.

STATE OF UTAH DIVISION OF WATER RIGHTS Phone No. 801-538-7416
Fax No. 801-538-7467

COMMENTS: _____

MONITOR WELL LOCATIONS:
(1) N 854 W 2150 from the SE corner, S06 T 3S R 4W SLBM
(2) S 117 E 554 from the NW corner, S07 T 3S R 4W SLBM
(3) S 1064 E 2194 from the NW corner, S07 T 3S R 4W SLBM

START/APPLICANT CARD INSTRUCTIONS: First, for each well, you must give a Driller (Start) Card to the licensed driller with whom you contract to construct the well. Second, it is your responsibility to sign and return this Applicant Card to this office immediately after completion of the well. **CAUTION: There may be local health requirements for the actual siting of your well. Please check with the proper local authority before construction begins. See the enclosed sheet addressing construction information.**

DRILLER (START) CARD for Monitor WELL#: 0515003M00

IMPORTANT: THIS CARD MUST BE RECEIVED BY THE DIVISION OF WATER RIGHTS PRIOR TO THE BEGINNING OF WELL CONSTRUCTION -- REQUIRED ONLY FOR WELLS DEEPER THAN 30 FT.

OWNER/APPLICANT NAME: TOOELE ARMY DEPOT

MAILING ADDRESS: SJMTE-CS-EO. 1 TOOELE ARMY DEPOT BLDG 8. TOOELE. UT 84074

PHONE NUMBER: 435-833-3504

WELL LOCATION: You are authorized to drill 3 Monitor Wells. SEE BELOW.

WELL UTM COORDINATES:

WELL ACTIVITY: NEW (X) REPAIR ( ) REPLACE ( ) ABANDON ( )
CLEAN ( ) DEEPEN ( )

For surface seals in unconsolidated formations (clay. silt. sand. and gravel). will you be using a temporary conductor casing or other formation stabilizer (e.g.. drilling mud) in the surface seal interval to maintain the required annular space?

(YES) or NO (Circle one).

Answering 'NO' suggests that you will be placing the surface seal in an open and unstabilized annular space. which may require onsite inspection of seal placement by the State Engineer's Office.

PROPOSED START DATE: 6-27-05

PROJECTED COMPLETION DATE: 7-27-05

LICENSE #: 626 LICENSEE/COMPANY: Layne Christensen Co.

Licensee Signature — Date: 6-22-05

D-17
D-18
D-19

NOTICE TO APPLICANT: THIS CARD IS TO BE GIVEN TO A UTAH LICENSED WATER WELL DRILLER FOR SUBMITTAL TO THE DIVISION OF WATER RIGHTS PRIOR TO WELL CONSTRUCTION.
STATE OF UTAH DIVISION OF WATER RIGHTS Phone No. 801-538-7416
Fax No. 801-538-7467

MONITOR WELL LOCATIONS:

(1) N 854 W 2150 from the SE corner, S06 T 3S R 4W SLBM
(2) S 117 E 554 from the NW corner, S07 T 3S R 4W SLBM
(3) S 1064 E 2194 from the NW corner, S07 T 3S R 4W SLBM

WELL DRILLER'S REPORT
State of Utah
Division of Water Rights

For additional space, use "Additional Well Data Form" and attach

Well Identification

Non-Production Well: 0515003M00 WIN: 34327

Owner *Note any changes*

TOOELE ARMY DEPOT
SJMTE-CS-EO
1 TOOELE ARMY DEPOT BLDG 8
TOOELE, UT 84074

Contact Person/Engineer: Richard Jirik / Parsons

Well Location *Note any changes*

N 854 W 2150 from the SE corner of section 06, Township 3S, Range 4W, SL B&M

Location Description: (address, proximity to buildings, landmarks, ground elevation,local well #) D-17

Drillers Activity Start Date: June 27, 2005 Completion Date: September 23, 2005

Check all that apply: ☒ New ☐ Repair ☐ Deepen ☐ Clean ☐ Replace ☐ Public Nature of Use: Monitor Well

If a replacement well, provide location of new well. _____ feet north/south and _____ feet east/west of the existing well.

DEPTH (feet) FROM	TO	BOREHOLE DIAMETER (in)	DRILLING METHOD	DRILLING FLUID
0	150	9	Percussion Hammer	Air

Well Log

DEPTH (feet) FROM	TO	WATER	PERMEABLE High	PERMEABLE Low	UNCONSOLIDATED CLAY	SILT	SAND	GRAVEL	COBBLES	BOULDER	OTHER	CONSOLIDATED ROCK TYPE	COLOR	DESCRIPTION AND REMARKS (e.g., relative %, grain size, sorting, angularity, bedding, grain composition density, plasticity, shape, cementation, consistancy, water bearing, ordor, fracturing, minerology, texture,degree of weathering, hardness, water quality, etc.)
0	130								XX					
130	150	X							XX					

Static Water Level

Date June 30, 2005 Water Level 130 feet Flowing? ☐ Yes ☒ No

Method of Water Level Measurement WLI If Flowing, Capped Pressure N/A PSI

Point to Which Water Level Measurement was Referenced Ground Level Elevation N/A

Height of Water Level reference point above ground surface N/A feet Temperature N/A degrees ☐ C ☐ F

Construction Information

DEPTH (feet)		CASING			DEPTH (feet)		☒SCREEN ☐PERFORATIONS ☐OPEN BOTTOM		
FROM	TO	CASING TYPE AND MATERIAL/GRADE	WALL THICK (in)	NOMINAL DIAM. (in)	FROM	TO	SCREEN SLOT SIZE OR PERF SIZE (in)	SCREEN DIAM. OR PERF LENGTH (in)	SCREEN TYPE OR NUMBER PERF (per round/interval)
0	130	4" SCh 40 PVC	40	4	130	150	.010	4	Factory Slot

Well Head Configuration: Above Grade Access Port Provided? ☒Yes ☐No

Casing Joint Type: Flush Thread Perforator Used: N/A

Was a Surface Seal Installed? ☒Yes ☐No Depth of Surface Seal: 128 feet Drive Shoe? ☒Yes ☐No

Surface Seal Material Placement Method: Tremie Bentonite pellets and grout

Was a temporary surface casing used? ☒Yes ☐No If yes, depth of casing: 150 feet diameter: 9 inches

DEPTH (feet)		SURFACE SEAL / INTERVAL SEAL / FILTER PACK / PACKER INFORMATION		
FROM	TO	SEAL MATERIAL, FILTER PACK and PACKER TYPE and DESCRIPTION	Quantity of Material Used (if applicable)	GROUT DENSITY (lbs./gal., # bag mix, gal./sack etc.)
0	125	Bentonite Grout	25 Bags	50 lbs each
125	128	Bentonite Pellets	2 Buckets	50 lbs each
128	150	16 - 40 Silica Sand	15 Bags	50 lbs each

Well Development and Well Yield Test Information

DATE	METHOD	YIELD	Units Check One		DRAWDOWN (ft)	TIME PUMPED (hrs & min)
			GPM	CFS		
	N/A					

Pump (Permanent)

Pump Description: N/A Horsepower: Pump Intake Depth: feet

Approximate Maximum Pumping Rate: Well Disinfected upon Completion? ☐Yes ☐No

Comments Description of construction activity, additional materials used, problems encountered, extraordinary circumstances, abandonment procedures. *Use additional well data form for more space.*

Well Driller Statement

This well was drilled and constructed under my supervision, according to applicable rules and regulations, and this report is complete and correct to the best of my knowledge and belief.

Name LAYNE CHRISTENSEN COMPANY (Person, Firm, or Corporation - Print or Type) License No. 626

Signature (Licensed Well Driller) Date September 28, 2005

APPENDIX B

6/28/05 Tuesday weather: partly cloudy 90° 10mph wind to N
7:00 I arrive at TEAD and head to Parsons Field office
7:10 Richard Jurik conducts kickoff meeting for this round of groundwater monitoring well installatio
Attending the meeting are

Richard Jurik	Parsons
Kurt Alloway	Parsons
Ben Hiza	Parsons
Matt Ivers	Klewfelder
Tom Kearn	Layne
Jake Smith	Layne

We discuss Health and Safety, IRW & the 90 Day yard, and well location and schedule
9:40 We take water truck and water dog tractor to water well #3 and load water
10:45 We head to well D-17 location with both
11:35 crew & I return for drill rig. Richard and Kurt stay and wet down site with water dog.
12:33 Back at D-17 crew sets up rig
13:29 Begin drilling at D-17
14:01 @ 30' deep we shut down for lightning. We water the perimeter of site with water wagon and fuel rig
14:50 We return water wagon to 90-Day yard
15:30 I complete paperwork and leave site

Matt Ivers 6/28/05

6/29/05 Wednesday weather: clear, no wind 70-85°

7:00 I arrive at D-17

7:40 Crew arrives. We have H&S tailgate. Topic: Fire hazard.

8:03 Begin drilling at 30' bgs following rig inspection

9:28 @ 90' Crew hooks up auxillary compressor - Sullair 750xH

10:29 @ 130' We observe first saturated cuttings. Shut down to set up secoundary containment. Crew must head to SLC for tank, drums and well construction materials.

14:41 Crew begins drilling at 130' bgs. We took a water level of 105.7'. We will drill to 150 and check again

15:06 150' bgs. Tom blows out hole. I again get 105.7' bgs for water level

15:40 2 drums cuttings generated PARSNZ05 18001 and 02

15:50 Carl Cole onsite

16:25 6 Drums water generated PARSNZ05 18003 thru 08

16:30 Crew decides to set well. Carl and Richard Jurik agree to set screen from 150 to 130 feet bgs.

17:00 Well is in place and in suspention for overnight.
I head to field office to make copies

17:30 I leave site for the day

Matt Carr 6/29/05

6/30/05 Thursday weather clear 65-87° slight breeze

6:40 I arrive at field office

7:05 I arrive at D-17. Crew onsite. We have tailgate H&S meeting. Topic: PPE

7:15 Crew begins sanding well, I do rig inspection on the Drum truck. Using 50 lb. bags of 16-40 Colorado Silica

7:30 Sand Pack Volume calculation.

as per page 48 of this logbook one linear foot of annular space (9" borehole / 4" well) is 0.35 ft^3
We are sanding from 150 to 128 ft bgs = 22 ft
Each sand bag is ≈ 0.5 ft^3

$22\ ft \times 0.35\ ft^3/ft = 7.7\ ft^3$

$7.7\ ft^3 \div 0.5\ bag/ft^3 = 15.4\ bags$

9:10 After 15 bags of sand Tom sounds top of sand at 127.8 ft. Crew now begins adding Cetco 1/4" Coated bentonite tablets. These are coated to fall thru 150 vertical feet of water without bridging Manufacturer states it should require 28.25 lbs of pellets to fill 0.35 ft^3 which is equal to 1 linear foot of annulus w this well (9" hole/4" well). We use 2-50lb buckets and tag top of seal at 124.1 which is 3.7 feet. Calculated volume should fill 3.5 feet.

10:01 Crew sets up to grout well. Scope of work calls for 18-20 % solid bentonite grout slurry. The manufacturer calls for 30% solids by volume. We use the manufacture spec in that it exceeds the Scope of Work in thickness. We use Pure Gold Grout. Each batch contains 2-50lb bags mixed with 28 gallons water. This yields 4.4 ft^3 with a weight of 10 to 10.2 lbs/gallon. We are filling ≈124 feet of borehole. $124\ ft \times 0.35\ ft^3/ft = 43.40\ ft^3$
Each bag of grout yields 2.2 ft^3 ∴ $43.40\ ft^3 \div 2.2\ ft^3/bag = 19.7$ bags

12:30 Crew has completed grouting. It took 25 bags so about 5 bags were lost to the formation Crew cleans up site and move toward Decon at 90 Day yard.

6/30/05 Thursday (cont)

14:10 Decon complete. Tom moves rig & pipe truck to the site of D-18. Kurt has moved a Baker tank into the 90-Day yard and we will transfer sump water into it when unloading drums later today

16:00 Larry McFarland & Dean Reynolds onsite to witness waste manifesting and transfer to the 90-Day yard

16:10 MP Environmental driver Leon Pierce is onsite at the north gate of the Tooele Associates property. We load the 8 drums into his truck. Larry signs manifest # P5007 as the generator. Leon displays placards

16:50 We head to 90-Day yard and unload drums.

17:10 Dean Reynolds signs manifest as facility owner and distributes copies to myself and Leon

17:50 Drums unloaded. Leon give me loading ticket 519964 and takes off

18:20 We have pumped existing rain water and Decon water from D-17 into Baker Tank which I labled as Haz Waste with Parsons # PARSNS0518101
I speak with Richard Jurik as to progress. Tom works on paper work

18:50 I lock up 90 Day and leave site

Matt Lane 6/30/05

7/1/05 Friday weather clear 65-95°, no wind

7:00 Arrive at D-18
7:10 Crew at D-17 cleaning up
7:30 Crew arrives. We do rig inspection and have H.S.S. Topic: Heat Stress
8:06 Begin drilling @ 0' on D-18
9:35 Drive spout plugs @ 78'
9:38 Drilling again
9:45 Carl Cole onsite
10:10 @ 100' bgs we must stop drilling because saturated zone is likely around 100' and we must containerize cuttings, and because of the 4th of July Holliday on monday no one from TEAD Environmental will be available to manifest cuttings that must be transported to the 90-Day yard within 72 hrs.
10:30 Kurt calls. He is at the 90-Day yard building the partition fence and he is having our "water dog" fire suppression trailer replaced with a larger one. Tom and Jake will drive it over. They have called Layne shop to have a well protector sent out for install today so the horses on site don't break the casing or their leg on the open hole. Carl leaves site
12:40 Crew has added 1 bag of bentonite chips to D-17 which brings top of grout to 3 bgs They then dig out hole a bit, slide 6' long 10" diameter steel casing into hole and grout in place using 4 bags portland cement (100 lb bags) Casing is 3' below ground and 3 feet above. They place a lid on casing as well. Carl Cole will provide lock
14:10 Crew goes to 90 Day to get drum truck & move drums
15:07 Drums delivered. All hands offsite

7/1/05

7/11/05 Monday weather: clear 80-90° no wind

12:20 I arrive at TEAD Field office. Tom Kerr & Jake Smith (Layne) are onsite with Kurt Alloway. They are picking up more cement as they have finished surface completion at D-18 and need to drill for and cement in bollards at D-17. We head to D-17

13:50 We drive T posts in around bollards and will rope off area so cows don't effect new concrete overnight. Crew works to set bollards at D-17

16:45 Crew will finish D-17, paint D-18 & D-17 Decon pipe truck and mob to D-19 tomorrow so we can begin drilling Wed morning. I will stay in office and work on well reports.

17:17 Leave TEAD field office

Matt Lowry 7/11/05

FIELD ACTIVITY REPORT

Project Number/WBS: 744139-20010 Date: 6/28/05

SWMU: 58 Arrival Time: 7:00

Team Leader: Richard Jurik Departure Time\Destination: 15:30

Team Members: Matt Ivers, Kurt Alloway Weather: partly cloudy to thunderstorm

Purpose: (Attach all appropriate forms)

- ☐ Geophysical Survey
- ☐ Soil Gas Survey
- ☐ Hydropunch
- ☐ Test Pit
- ☐ GPS
- ☐ CPT
- ☐ Other (specify) _____
- ☒ Well Installation D-17
- ☐ Well Development _____
- ☐ Microwell Sampling
- ☐ Monitor Well Sampling
- ☐ Vertical Boring
- ☐ Angle Boring
- ☐ Hand Auger
- ☐ Surface Soil Sampling

Protection Level: ☒ D ☐ C ☐ B ☐ A

Health and Safety Briefing: Time 7:00 People Present see above

Topics Discussed: Project H&S plan

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M/C Parties Notified ☐ TEU Response ☐ Lockheed Monitoring ☐ Range Control ☐ Pillbox Support

Photos Camera # _____ Roll # _____ Frame # _____

IDW Drums: Purge / Rinse / Soil Drum Number(s): ES

Closed?: Y / N Current Location: Update DITF?: Y / N

Notes: 7:00 I arrive at office (Parsons Field office at TEAD) 7:10 Richard conducts kickoff meeting: Attending Richard Jurik Kurt Alloway, Ben Hiza, Matt Ivers Tom Kevin Jake Smith 9:40 We head to WW3 and get water for drilling and fire suppression trailer 10:45 Take Water truck to D-17 12:33 Arrive at D-17 with drill rig 13:29 Begin drilling 14:01 @ 30' shut down for lightning 14:50 Wet down site and return water rig to 90-Day 15:30 Complete paperwork and leave site.

FIELD ACTIVITY REPORT

Project Number/WBS: 744139-20010 Date: 6/29/05

Site: SWMU 58 Arrival Time: 7:00

Team Leader: Richard Jurik Departure Time \Destination: 17:30

Team Members: Matt Ivers, Kurt Alloway Weather: clear, no wind 70-85°

Purpose: (Attach all appropriate forms)

- ☐ Geophysical Survey
- ☐ Soil Gas Survey
- ☐ Hydropunch
- ☐ Test Pit
- ☐ GPS
- ☐ CPT
- ☐ Other (specify) _____
- ☐ Well Installation D-17
- ☐ Well Development _____
- ☐ Microwell Sampling
- ☐ Monitor Well Sampling
- ☐ Vertical Boring
- ☐ Angle Boring
- ☐ Hand Auger
- ☐ Surface Soil Sampling

Protection Level: ☒ D ☐ C ☐ B ☐ A

Health and Safety Briefing: Time 7:40 People Present Matt Ivers, Tom Kerns, Jake Smith

Topics Discussed: Fire Hazards

Logbook Book # B071503 Page # 139

Photos Camera # _____ Roll # _____ Frame # _____

IDW Drums: Purge / Rinse / Soil Drum Number(s): ES

Closed?: Y / N **Current Location:** **Update DITF?: Y / N**

Notes: 7:00 Arrive at D-17 7:40 Crew arrives Have H&S tailgate 8:03 Begin drilling at 30' following rig inspection 9:28 @ 90' hook up aux. air compressor 10:29 @ 130' observe saturated cutting set up containment. Crew to SLC for materials 14:41 Begin drilling and Drumming 15:06 150' bgs Take w.l. 105.7' Generate 2 drums soil 6 drums water 16:30 lower well casing into hole 17:00 Head to field office 17:30 leave site for day

Attachment 1-2

FIELD ACTIVITY REPORT

Project Number/WBS: 744139-20010 Date: 6/30/05

Site: SWMU 58 Arrival Time: 6:40

Team Leader: Richard Jurik Departure Time \Destination: 18:50

Team Members: Matt Ivers, Kurt Alloway Weather: clear 65-87° slight breeze

Purpose: (Attach all appropriate forms)

- ☐ Geophysical Survey
- ☐ Soil Gas Survey
- ☐ Hydropunch
- ☐ Test Pit
- ☐ GPS
- ☐ CPT
- ☐ Other (specify) _____
- ☐ Well Installation D-17
- ☐ Well Development _____
- ☐ Microwell Sampling
- ☐ Monitor Well Sampling
- ☐ Vertical Boring
- ☐ Angle Boring
- ☐ Hand Auger
- ☐ Surface Soil Sampling

Protection Level: ☒ D ☐ C ☐ B ☐ A

Health and Safety Briefing: Time 7:05 People Present Matt Ivers, Tom Kerns, Jake Smith

Topics Discussed: PPE

Logbook Book # B071503 Page # 140, 141

Photos Camera # _____ Roll # _____ Frame # _____

IDW Drums: Purge / Rinse / Soil Drum Number(s): ES

Closed?: Y / N **Current Location:** **Update DITF?: Y / N**

Notes: 6:40 Arrive at field office 7:05 H&S tailgate 7:15 Rig Inspection Begin sampling in well screen 9:10 Sanded from 150 to 127.8' - 15 bag 10:00 Bentonite seal set 127.8 to 124.1 (2 buckets) Set up grout plant 12:30 Well grouted 124.1 to surface 25 bags 14:10 Pipe truck & rig De-conned. Mob to D-18 16:00 Move 8 drums (2 soil + 6 soil and water) to 90 Day yard PARSNZ0518001 thru 08 Manifest # P5007 17:50 Drums unloaded - Ticket #519964 18:20 Pump Decon trough to Backer tank 18:50 Leave site

Attachment 1-2

FIELD ACTIVITY REPORT

Project Number/WBS: 744139-20010 Date: 7/11/05

Site: SWMU 58 Arrival Time: 12:20

Team Leader: Richard Jurik Departure Time \Destination: 17:20

Team Members: Matt Ivers, Kurt Alloway Weather: clear 80-90° no wind

Purpose: (Attach all appropriate forms)

- ☐ Geophysical Survey
- ☐ Soil Gas Survey
- ☐ Hydropunch
- ☐ Test Pit
- ☐ GPS
- ☐ CPT
- ☐ Other (specify) _____
- ☒ Well Installation D-17 D-18
- ☐ Well Development _____
- ☐ Microwell Sampling
- ☐ Monitor Well Sampling
- ☐ Vertical Boring
- ☐ Angle Boring
- ☐ Hand Auger
- ☐ Surface Soil Sampling

Protection Level: ☒ D ☐ C ☐ B ☐ A

Health and Safety Briefing: Time _____ People Present Matt Ivers, Tom Kerw, Jake Smith

Topics Discussed: _____

Logbook Book # B071503 Page # 147

Photos Camera # _____ Roll # _____ Frame # _____

IDW Drums: Purge / Rinse / Soil Drum Number(s): ES

Closed?: Y / N **Current Location:** **Update DITF?: Y / N**

Notes: 12:20 Arrive at field office. Tom Kerw & Jake Smith onsite w/ Kurt Alloway Crew has set bollards at D-18. Picking up t-posts to protect well from cows. 18:45 Bollards and pad complete at D-18 and bollards surrounded by t-posts and rope. Bollards set at D-17 and t-posts and rope in place 17:17 offsite

Attachment 1-2

FIELD ACTIVITY REPORT

Project Number/WBS: 744139-20010 Date: 7/12/05

Site: SWMU 58 Arrival Time: 8:00

Team Leader: Richard Jurgk Departure Time \Destination: 5:00

Team Members: Matt Ivers, Kurt Alloway Weather: clear, hot (80-90) no wind

Purpose: (Attach all appropriate forms)

- ☐ Geophysical Survey
- ☐ Soil Gas Survey
- ☐ Hydropunch
- ☐ Test Pit
- ☐ GPS
- ☐ CPT
- ☐ Other (specify) _____
- ☒ Well Installation D-17, D-18
- ☐ Well Development _____
- ☐ Microwell Sampling
- ☐ Monitor Well Sampling
- ☐ Vertical Boring
- ☐ Angle Boring
- ☐ Hand Auger
- ☐ Surface Soil Sampling

Protection Level: ☒ D ☐ C ☐ B ☐ A

Health and Safety Briefing: Time — People Present Matt Ivers, Tom Kerns, Jake Smith

Topics Discussed: —

Logbook Book # B071503 Page # —

Photos Camera # _____ Roll # _____ Frame # _____

IDW Drums: Purge / Rinse / Soil Drum Number(s): ES

Closed?: Y / N **Current Location:** **Update DITF?: Y / N**

Notes: Crew set protector pad at D-17, Painted guard posts and protector on D-17 and D-18, moved to 90-Day yard, decon'ed pipetruck, moved equipment back to D-19

Attachment 1-2

HEALTH AND SAFETY BRIEFING D-17

Date: 6/29/05 Time: 7:00

Site Health and Safety Officers(s)

ATTENDEES SIGNATURE

1.	11.
2.	12.
3.	13.
4.	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

AGENDA

1. Fire Hazard high to extreem- smoke only in vehicle
2. Water Dog will be wetting area around 10:00
3.
4.
5.
6.
7.
8.
9.

NOTE: Site specific health and safety (tailgate) briefings will be conducted each morning at the work sites by the field team leader. Briefings will be documented in the field log.

HEALTH AND SAFETY BRIEFING D-17

Date: 6 / 30 / 05 Time: 7:05

Site Health and Safety Officers(s)

ATTENDEES SIGNATURE

1. [signature]	11.
2. Tom Ka	12.
3. [signature]	13.
4.	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.
10.	20.

AGENDA

1. When in the saturated cuttings use nitrile gloves
2. No hand to mouth contact
3. Contain all solids and liquids
4. Do air monitoring
5.
6.
7.
8.
9.

NOTE: Site specific health and safety (tailgate) briefings will be conducted each morning at the work sites by the field team leader. Briefings will be documented in the field log.

Layne Christensen Company Job Site Safety Audit

Date 6/28/05 | Site: TEAD Phase II RFI Well D-17 | Client: USACE

Rig/Crew: Tom Kern, Jake Smith Drill Systems AP1000 Becker Hammer

Observers: Matt Ivers

Crew Safety/PPE	YES	NO	N/A		YES	NO	N/A
Hard Hat	☑	☐	☐	Safety Glasses	☑	☐	☐
Lifting Belt	☑	☐	☐	Training Certificates	☐	☐	☑
Gloves	☑	☐	☐	Hearing Protection	☑	☐	☐
Safety Shoes	☑	☐	☐	Proper Clothing	☑	☐	☐
Layne Safety Practice Manual	☐	☐	☑	Dust masks/Level C respirators	☑	☐	☐
DOT physical card, CDL and logbooks present and up to date?	☐	☐	☑	Emergency numbers/HASP present and posted?	☑	☐	☐

Comments:

Site Set-up and Safety							
Hole openings covered or tied off?	☐	☐	☑	Timbers and set-up jacks stable?	☑	☐	☐
Anchor guy lines secure, evenly tensioned and flagged?	☐	☐	☑	Mud or circulation pits barricaded or fenced?	☐	☐	☑
Excavation permit (CA) and shoring considerations?	☐	☐	☑	Traveling blocks, widow makers and elevators inspected?	☐	☐	☑
Site clean and organized? Footing?	☑	☐	☐	Bulk fuel stores lined and grounded?	☐	☐	☑
Pipe blocked and sloped from work area?	☑	☐	☐	Correct monitoring equipment present?	☑	☐	☐
Overhead and underground lines identified?	☑	☐	☐	Chemicals stored away from fuel and protected?	☐	☐	☑
Material Safety Data Sheets present?	☐	☐	☑	Warning signs/Exclusion zone posted?	☐	☑	☐

Comments: Exclusion zone not erected due to remote secured location

Rig Safety							
Kill switch operational?	☑	☐	☐	All mast wiring in conduits?	☑	☐	☐
Vehicle pretrip inspection performed and documented?	☐	☐	☑	Seat belts available and used on all equipment?	☐	☐	☑
Fire extinguisher present and charged?	☑	☐	☐	First aid/BBP kit present and stocked?	☑	☐	☐
Danger points color coded?	☐	☐	☑	Controls identified?	☑	☐	☐
Side guardrails on platform rigs?	☐	☐	☑	Ropes and chains in good condition?	☑	☐	☐
Belts and rotating shafts guarded?	☑	☐	☐	All hooks have safety latches?	☑	☐	☐
Cables in good shape, clamps installed properly?	☑	☐	☐	Pressure hoses safety chained at connections?	☑	☐	☐
Good housekeeping in vehicle cabs?	☐	☐	☑	Spill control materials present?	☑	☐	☐

Rig Safety (cont'd.)	YES	NO	N/A		YES	NO	N/A
DOT #53175 and inspection stickers present and up to date?	☐	☐	☑	Bill of lading, HAZMAT CDL and placarding for hazardous materials hauled?	☐	☐	☑
Climbing blocks and body harness installed, available and used?	☑	☐	☐	Heaters and engines vented outdoors and extinguished?	☐	☐	☑

Comments:

Tool and Equipment Safety							
Spinning chains have rope tail?	☐	☑	☐	Safety cans used for gasoline storage?	☑	☐	☐
Tools and slings in good condition?	☑	☐	☐	All generators grounded?	☑	☐	☐
Compressed gas bottles secure and upright?	☐	☑	☐	GFI used and electrical cords in good condition?	☑	☐	☐
Tag lines used on hoisted pipe and equipment?	☐	☑	☐	Check valve at torch/hose connection and hoses in good condition?	☐	☐	☑

Comments:

Employee Training							
Employees instructed on safe equipment use?	☑	☐	☐	Heat stress breaks followed and documented?	☑	☐	☐
Knowledgeable of chemicals on site?	☑	☐	☐	First aid/CPR certified?	☑	☐	☐
Documented tailgate safety meeting before start of work?	☑	☐	☐	Applicable training up to date including respirator fit test, MSHA and/or OSHA.	☑	☐	☐

Comments: H&S Topics 6/28/05 - overview of SSHSP
6/29 - Fire hazards
6/30 - Saturated zone procedure

Confined Space Work							
Confined Space Entry Permit complete?	☐	☐	☑	Gas monitor on site?	☑	☐	☑
Ventilation equipment available?	☐	☐	☑	Body harness and safety line present?	☐	☐	☑

Pump Jobs/Well Rehabilitation/Filters and Vaults							
Lockout/Tagout on electrical controls?	☐	☐	☑	Chemical storage area secure?	☐	☐	☑
PPE for chemicals available?	☑	☐	☐	Water available for flushing chemicals?	☑	☐	☐
Cable spool and in safe position?	☑	☐	☐	Explosives stored and secured properly?	☐	☐	☑
Test pump engine drive shaft guarded?	☐	☐	☑				

Comments: Rechecked on 6/29, 6/30, ~~6/31~~ 7/1

Auditor's Signature _____

Driller's Signature Tomka

Helper's Signature Jacob

EQUIPMENT CALIBRATION LOG

Tooele Army Depot

Phase II RFI @ SWMU 58

Eqpt. Type PID	Serial No.	Date	Calibration Time	Calibration Gas	Calibration Gas Lot No.	Calibrated By:	Comments
MiniRAE 2000	9296	6/29/05	9:25	100 ppm isobutelyne	82617-117	Matt Ivers	Monitoring well D-17
"	"	7/6/05	7:50	"	"	"	" D-18
"	"	7/14/05	8:10	"	"	"	" D-19
"	"	7/20/05	14:40	"	"	"	" C-45
"	"	7/28/05	10:40	"	"	"	" C-48f
"	"	7/29/05	7:30	"	"	"	" "
"	"	8/1/05	8:30	"	"	"	" "
"	"	8/5/05	8:05	"	"	"	" C-47f
"	"	8/8/05	8:25	"	"	"	" "
"	"	8/9/05	8:38	"	"	"	" "
"	"	9/20/05	8:50	"	"	"	" C-49

APPENDIX C

DRILLING LOG | DIVISION: Sacramento | INSTALLATION: Tooele Army Depot | SHEET 1 OF 4 SHEETS

1. PROJECT: Phase II RFI @ SWMU 58
2. LOCATION (Coordinates or Station): 7381795.49 N 1407265.97 E
3. DRILLING AGENCY: Layne Geoconstruction
4. HOLE NO. (As shown on drawing title and file number): D-17
5. NAME OF DRILLER: Tom Kerw, Jake Smith
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 150'
8. DEPTH DRILLED INTO ROCK: Ø
9. TOTAL DEPTH OF HOLE: 150'
10. SIZE AND TYPE OF BIT: 9" O.D 6" I.D.
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Drill Systems AP 1000 Becker Hammer
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 30 | UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: —
15. ELEVATION GROUND WATER: 110.00 TOC 7/13/05
16. DATE HOLE: STARTED 6/28/05 | COMPLETED 6/30/05
17. ELEVATION TOP OF [redacted] CASING 4476.25
18. ~~TOTAL CORE RECOVERY FOR BORING~~ GROUND 4473.24
19. SIGNATURE OF INSPECTOR: [signature]

Time (a)	Depth (b)	Legend (c)	Classification of Materials (Description) (d)	Recovery (e)	Sample No. (f)	Remarks (Drilling time, water loss, depth of weathering, etc., if significant) Penetrations rate
13:29	0		Silt, (ML), med plastic, light grey 5YR 7/1, Dry weak reaction to HCL, with roots			Because the Becker Hammer Drilling Method allows a maximum clast size of about 6 inches to get to the surface, percentages of boulders, cobbles and gravel are speculative
	2					
	4			X	1	
	6					
	8		- occasionally grading to silty or clayey fine sand, with occasional trace gravel or cobble			
13:37	10			X	2	0.8 min/ft
13:40	12					While clasts range from angular to rounded, many angular clast are likely created by the drilling process so as long as some waterworn clasts are observe in samples, bedrock will not be indicated
	14			X	3	
	16					
	18					0.4 min/ft
13:44	20			X	4	
13:47	22					Unless otherwize indicated, rock type represented in the cuttings consists of primarily varying percentages of tan to gray quartzite and gray to dark gray limestone and dolomite, with trace amounts of yellow brown sandstone Multicolored volcanics and a white silicate mineral
	24		Well graded gravel with silt and sand (GW-GM) 5% cobble to 5", 60% gravel, fine to coarse, [redacted] angular to subround, 20% fine sand 10% silt, brown 7.5 YR 5/2 moist, strong reaction to HCL	X	5	
	26					
	28					
14:01	30					1.4 min/ft

PROJECT: TEAD Phase II RFI | HOLE NO.: D-17 | SIGNATURE OF INSPECTOR: [signature] | DATE: 6/29/05

TIME	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	RECOVERY	SAMPLE NO.	REMARKS
6/29/05 8:03	32		Well Graded Gravel with silt and sand (GW-GM) 5% cobble up to 5", 60% gravel fine to coarse, sub angular to subrounded, 20% fine sand, 10% silt, brown 7.5YR 5/2, moist; strong reaction to HCL	X	6	
	34					
	36			X	7	
	38					
8:10	40					0.7 MIN/ft
8:17				X	8	
	42		Silty Clay (CL), med plasticity, Dark brown 7.5YR 3/3, moist, weak reaction to HCL			
	44					
	46			X	9	
	48		-as above GW-GM clasts consist of mainly tan to gray quartzite and/or Dark to light grey limestone or dolomite with trace amounts of yellow brown sandstone, red, green and yellow extrusive volcanics and a white Calcedony Mineral			
8:21 8:24	50			X	10	0.4 MIN/ft
	52					
	54					
	56			X	11	
	58					
8:33 8:40	60			X	12	0.9 MIN/ft
	62					
	64					
	66			X	13	
	68					
8:47	70					0.7 MIN/ft

TIME	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	RECOVERY	SAMPLE NO.	REMARKS
8/29/05 8:50					14	
	72					
	74		as above (GW-GM) but			
			- clay content increases to about 10%		15	
	76		color changes to light yellowish brown 2.5Y6/4			
	78		slight increase in plasticity of matrix soil			
8:56	80					0.6 min/ft
9:19					16	
	82					
	84					
	86				17	
	88					
9:28	90					0.9 min/ft
9:40					18	Crew hooks up auxillary compressor Sullair 750 XH
	92					
	94					
	96				19	
				PID=0.2		
	98					
9:46	100					0.6 min/ft
9:50					20	
	102		- Gravelly Clay (CL) *30% gravel, subrounded, fine to coarse, high plasticity very pale brown 10YR 7/4 moist, weak HCl reaction	0.0		
	104					▼
			- clayey gravel (GC) 60% gravel		21	Eventually water equilibrated @ 105.7'
	106			0.2		
	108		- Silty Clay (CL) high plasticity very pale brown 10YR 7/4 moist, weak HCl			
9:57	110					0.7 min/ft
			Clayey Gravel (see next)			

PROJECT: TEAD Phase II RFI | HOLE NO.: D-17 | SIGNATURE OF INSPECTOR: [signature] | DATE: 6/29/05

TIME	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	RECOVERY	SAMPLE NO.	REMARKS
09:05			Clayey Gravel (GC) 80% cobble and gravel fine to coarse, angular to subrounded, 20% silty clay med plasticity, brownish yellow 10YR6/6 Moist to wet, weak reaction to HCL		22	
	112			0.0 (PID)		
	114					
	116				23	
	118			0.3		
10:13	120					0.8 MIN/ft
10:18					24	
	122			1.1		
	124					
	126				25	Initial free water observed at 130' but later measured at 105.7'
			- Well Graded gravel with sand (GW) 80% gravel and cobble fine to coarse, angular to subrounded, 20% sand fine to coarse we multicolored (fines are wash away in saturated zone so color is that of individual clasts wet, Reaction to HCL varies with clast type - increased amounts of extrusive volcanics observed	0.2		▽
	128					1.1 MIN/ft
10:29	130					
14:41					26	- soils appear saturated crew break to set containment
	132			0.0		
	134					
	136				27	
				0.0		
	138					
14:49	140					0.8 MIN/ft
14:54					28	
	142			0.0		
	144					
	146				29	
				0.0		
	148					
				0.0		
15:06	150		END OF HOLE		30	1.2 MIN/ft

PROJECT

311 Rock Avenue • Golden, CO 80401
PH 303.526.4432 • FAX 303.526.4426
email: PedlerRAS@aol.com • www.rasinc.org

Integrated Subsurface Evaluation

D-17

COMPANY	: Parsons			OTHER SERVICES:	
WELL	: D-17			None	
LOCATION/FIELD	: None			None	
COUNTY	: None			None	
STATE	: UT				
SECTION	: None	TOWNSHIP	: None	RANGE	: None
DATE	: 09/10/05	PERMANENT DATUM	: TOPVC		
DEPTH DRILLER	: 150			KB	: None
LOG BOTTOM	: 148.70	LOG MEASURED FROM:	TOPVC	DF	: None
LOG TOP	: 0.60	DRL MEASURED FROM:	None	GL	: None
CASING DIAMETER	:	LOGGING UNIT	: 202		
CASING TYPE	: PVC	FIELD OFFICE	:		
CASING THICKNESS:	0.2	RECORDED BY	: DM		
BIT SIZE	: 4.5	BOREHOLE FLUID	: 0	FILE	: ORIGINAL
MAGNETIC DECL.	: 0	RM	: 0	TYPE	: 9512A
MATRIX DENSITY	: 2.71	RM TEMPERATURE	: 0		
NEUTRON MATRIX	: Dolomite	MATRIX DELTA T	: 54		
				THRESH:	2500

7381795.49N
1407265.97E

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

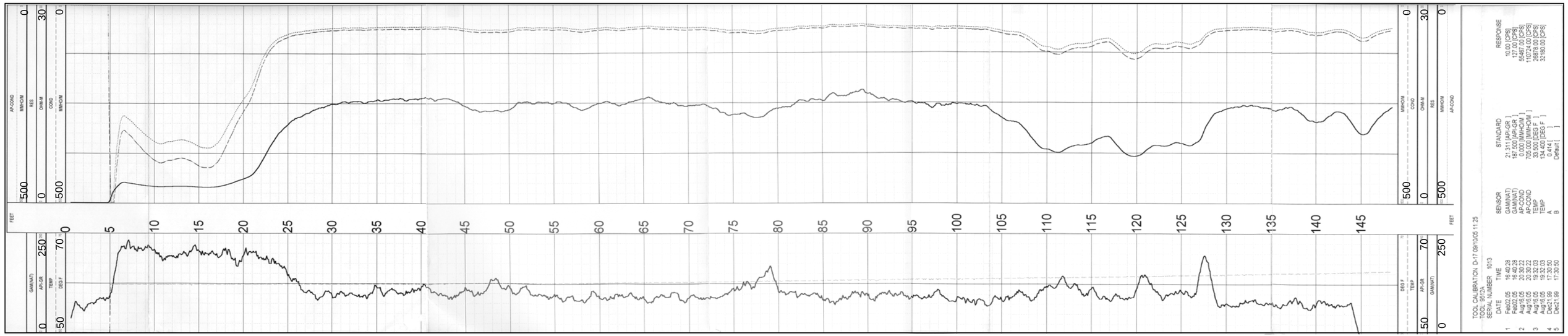
SLC6Q017.ppt

KLEINFELDER
PARSONS
Date:01/18/2006
Project Number 48743.1B

TEAD Phase II RFI

WELL D-17
NATURAL GAMMA AND
INDUCTION ELECTRICAL LOGS

PLATE
C-2a



SLC5Q094.ppt

KLEINFELDER
PARSONS

Date: 03/24/2005
Project Number 48743.1B

TEAD Phase II RFI

WELL D-17
NATURAL GAMMA AND INDUCTION LOGS

PLATE
C-2b

zLzL

311 Rock Avenue • Golden, CO 80401
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email: PedlerRAS@aol.com • www.rasinc.org

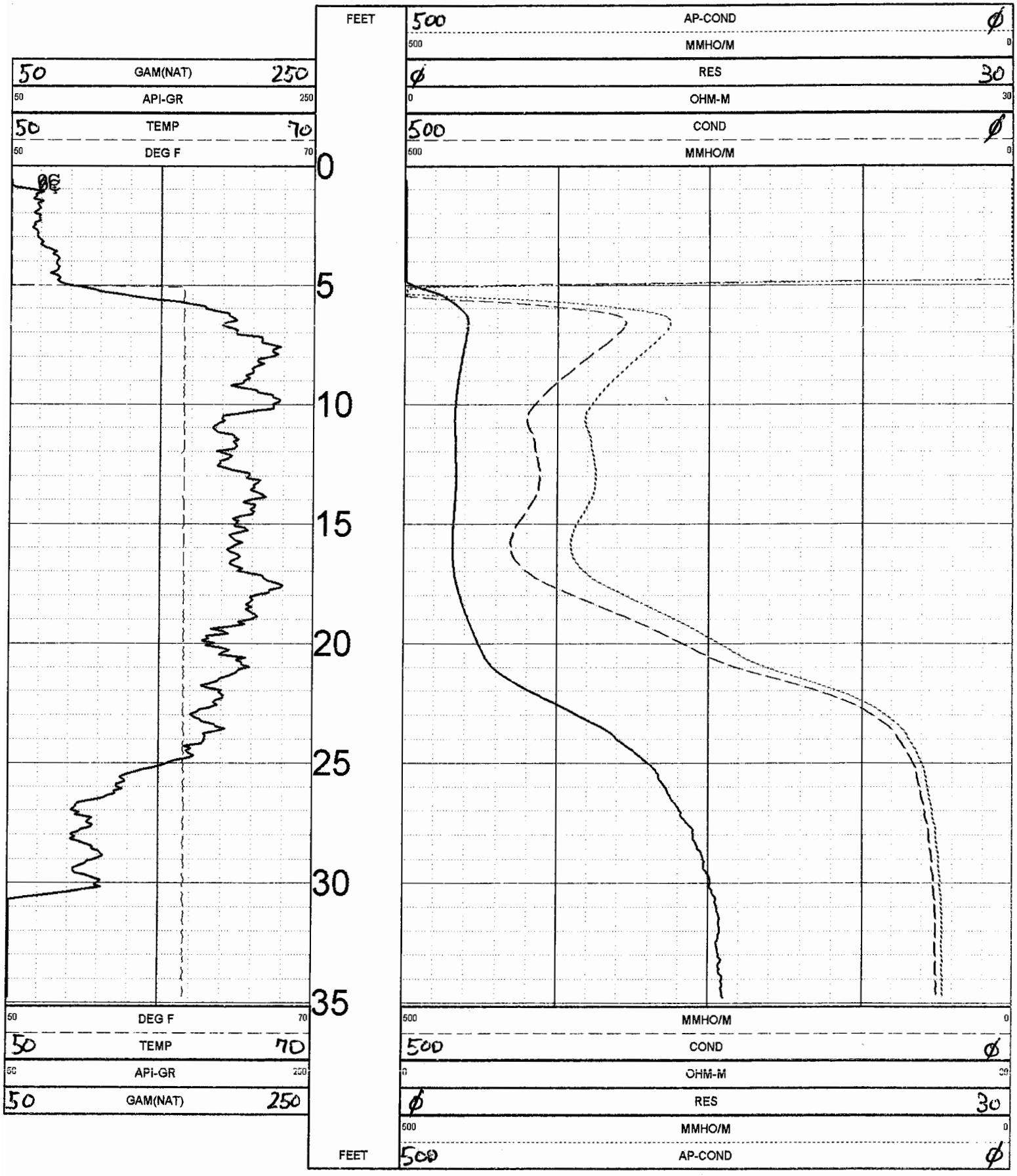
Integrated Subsurface Evaluation

D-17-Rpt

COMPANY	: Parsons			OTHER SERVICES:	
WELL	: D-17-Rpt			None	
LOCATION/FIELD	: None			None	
COUNTY	: None			None	
STATE	: UT				
SECTION	: None	TOWNSHIP	: None	RANGE	: None
DATE	: 09/10/05	PERMANENT DATUM	: TOPVC		
DEPTH DRILLER	: 150			KB	: None
LOG BOTTOM	: 35.00	LOG MEASURED FROM:	TOPVC	DF	: None
LOG TOP	: 0.60	DRL MEASURED FROM:	None	GL	: None
CASING DIAMETER	:	LOGGING UNIT	: 202		
CASING TYPE	: PVC	FIELD OFFICE	:		
CASING THICKNESS:	0.2	RECORDED BY	: DM		
BIT SIZE	: 4.5	BOREHOLE FLUID	: 0	FILE	: ORIGINAL
MAGNETIC DECL.	: 0	RM	: 0	TYPE	: 9512A
MATRIX DENSITY	: 2.71	RM TEMPERATURE	: 0		
NEUTRON MATRIX	: Dolomite	MATRIX DELTA T	: 54		
				THRESH:	2500

7381795.49N
1407265.97E

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS



TOOL CALIBRATION D-17-Rpt 09/10/05 11:45
TOOL 9512A
SERIAL NUMBER 1013

	DATE	TIME	SENSOR	STANDARD	RESPONSE
1	Feb02,05	17:40:28	GAM(NAT)	21.311 [API-GR]	10.00 [CPS]
	Feb02,05	16:40:28	GAM(NAT)	187.500 [API-GR]	127.00 [CPS]

50	GAM(NAT)	250

ϕ	RES	30
500	MMHO/M	0
500	AP-COND	ϕ

FEET

TOOL CALIBRATION D-17-Rpt 09/10/05 11:45
TOOL 9512A
SERIAL NUMBER 1013

	DATE	TIME	SENSOR	STANDARD	RESPONSE
1	Feb02,05	17:40:28	GAM(NAT)	21.311 [API-GR]	10.00 [CPS]
	Feb02,05	16:40:28	GAM(NAT)	187.500 [API-GR]	127.00 [CPS]
2	Aug16,05	20:30:22	AP-COND	0.000 [MMHO/M]	55467.00 [CPS]
	Aug16,05	20:30:22	AP-COND	705.000 [MMHO/M]	110724.00 [CPS]
3	Aug16,05	19:32:03	TEMP	33.500 [DEG F]	26878.00 [CPS]
	Aug16,05	19:32:03	TEMP	134.400 [DEG F]	32180.00 [CPS]
4	Dec21,99	17:30:50	A	0.414 [ ]	
5	Dec21,99	17:30:50	B	Default [ ]	

ntegrated Subsurface Evaluation

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D-17

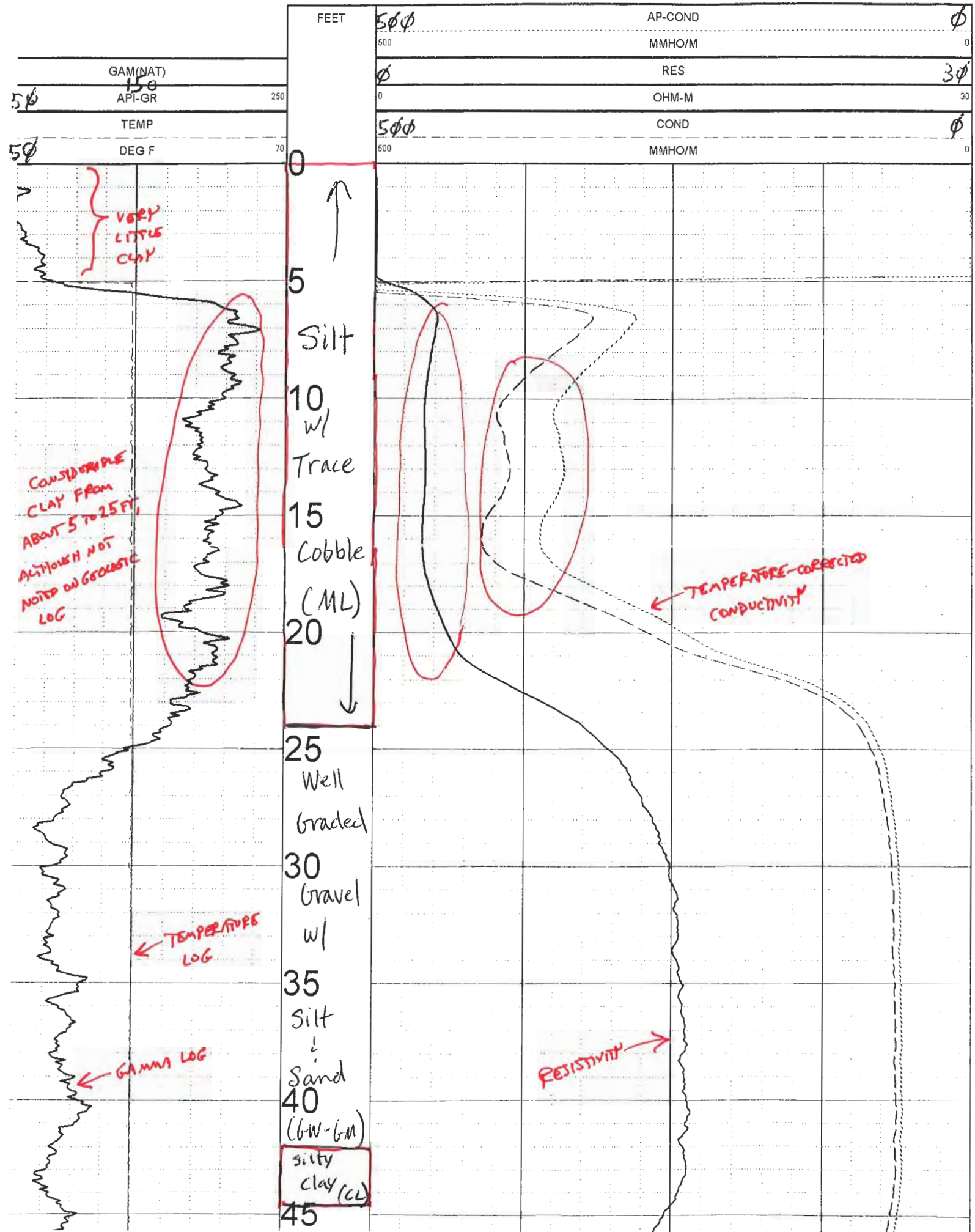
INTERPRETATION OF DOWNHOLE GEOPHYSICAL LOGS

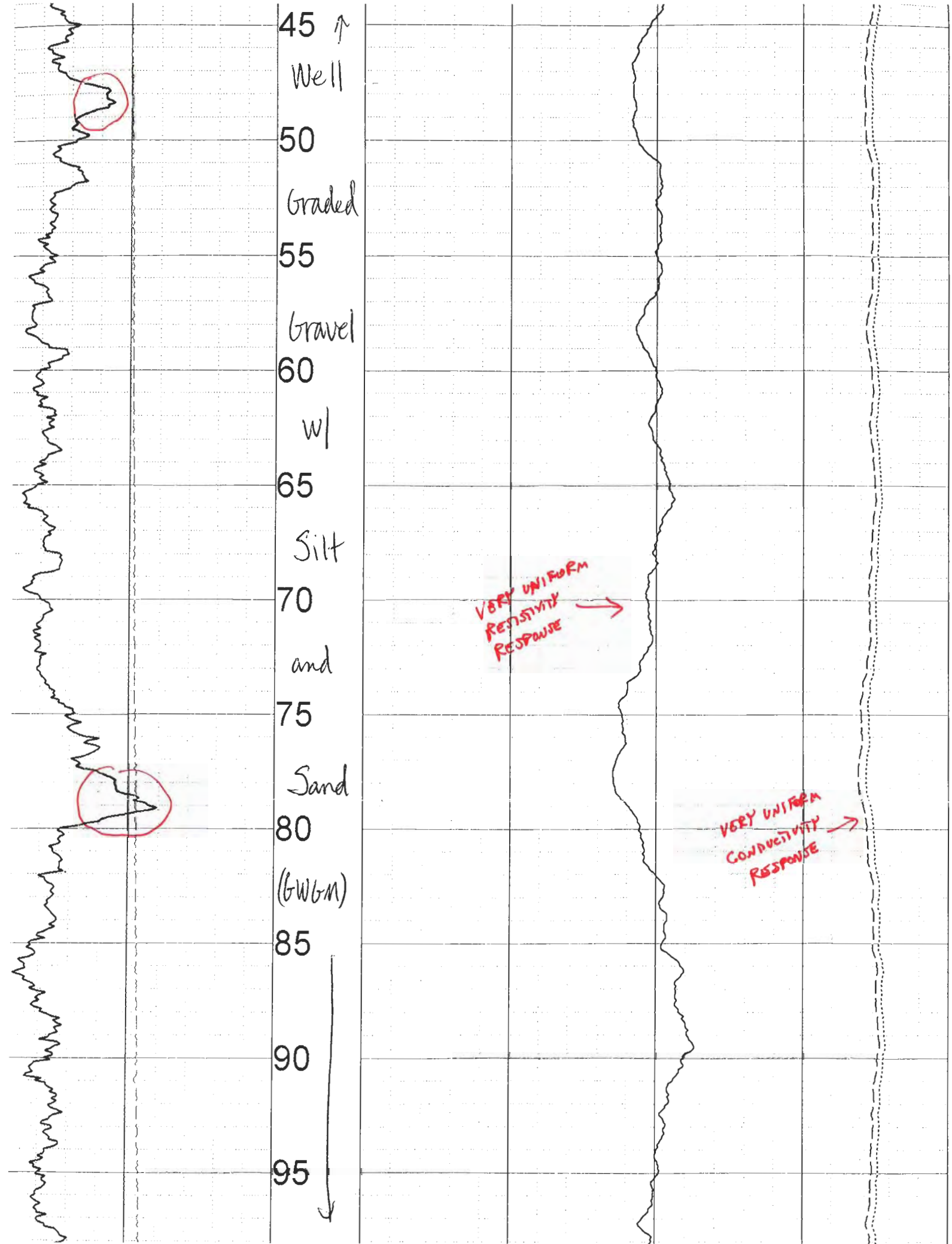
OMPANY	: Parsons			OTHER SERVICES:	
ELL	: D-17			None	
OCATION/FIELD	: None			None	
OUNTY	: None			None	
TATE	: UT				
ECTION	: None	TOWNSHIP	: None	RANGE	: None
ATE	: 09/10/05	PERMANENT DATUM	: TOPVC		
EPTH DRILLER	: 150			KB	: None
OG BOTTOM	: 148.70	LOG MEASURED FROM	: TOPVC	DF	: None
OG TOP	: 0.60	DRL MEASURED FROM	: None	GL	: None
ASING DIAMETER	:	LOGGING UNIT	: 202		
ASING TYPE	: PVC	FIELD OFFICE	:		
ASING THICKNESS	: 0.2	RECORDED BY	: DM		
T SIZE	: 4.5	BOREHOLE FLUID	: 0	FILE	: ORIGINAL
AGNETIC DECL.	: 0	RM	: 0	TYPE	: 9512A
ATRIX DENSITY	: 2.71	RM TEMPERATURE	: 0		
EUTRON MATRIX	: Dolomite	MATRIX DELTA T	: 54		
				THRESH	: 2500

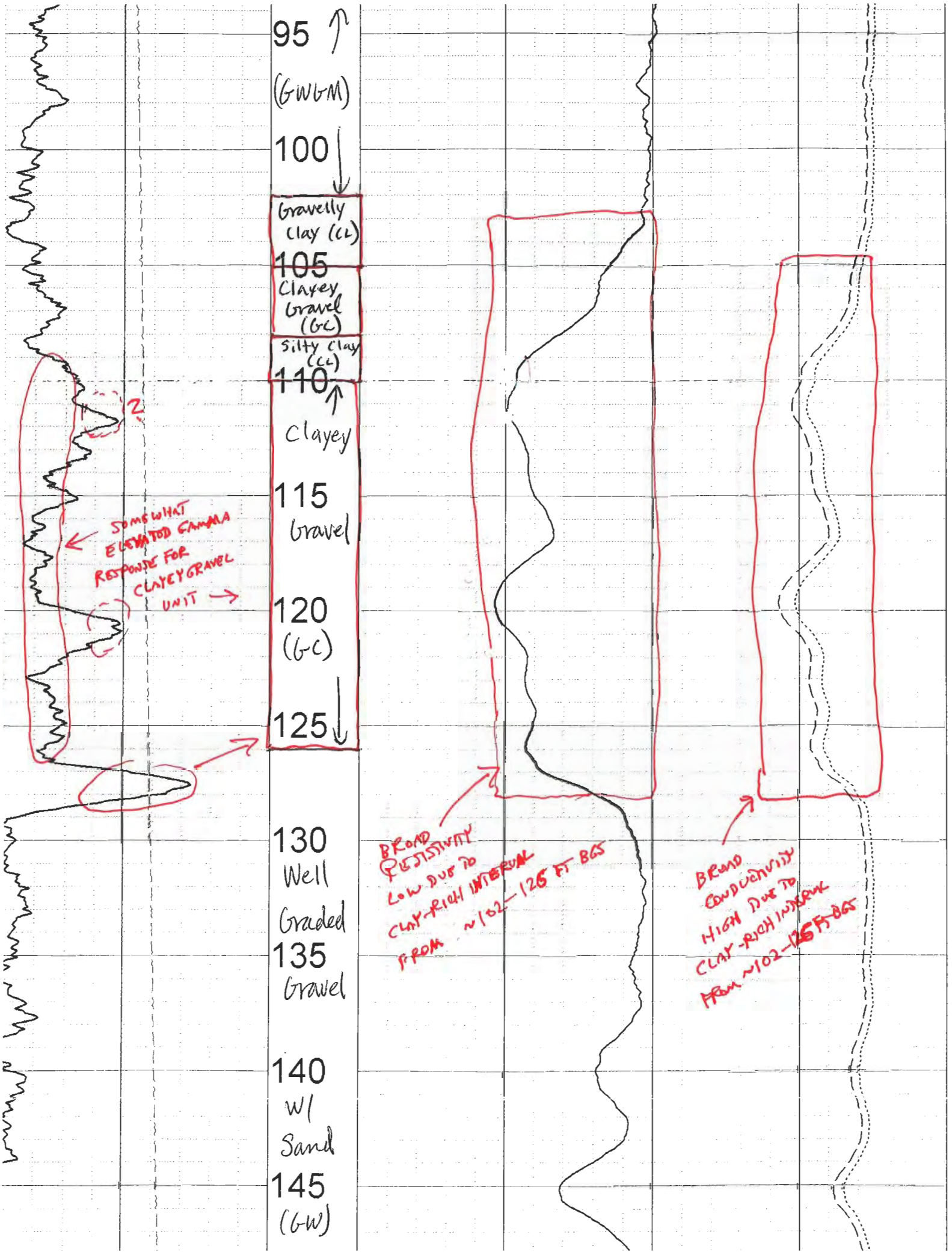
7381795.49N
1407265.97E

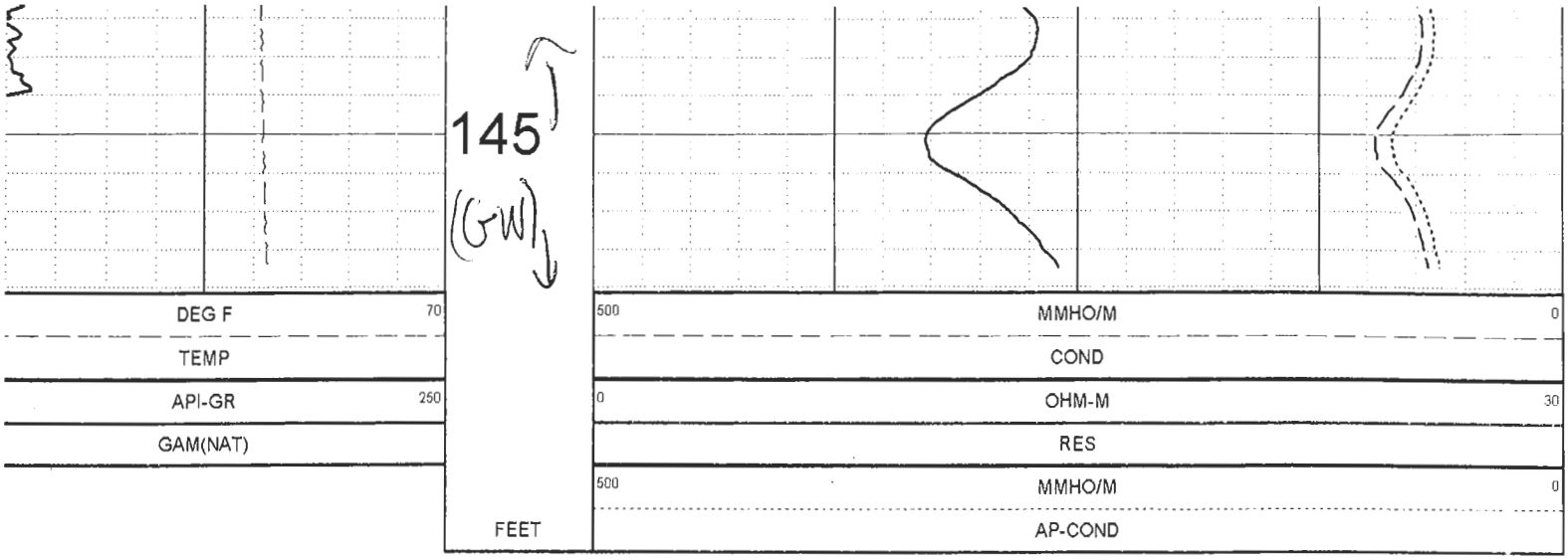
ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

BOREHOLE GEOLOGY FROM GEOLOGIC BORING LOG BY MATT IVERS


FEET
AP-COND
500
MMHO/M
0
GAM(NAT)
150
API-GR
250
RES
0
OHM-M
30
TEMP
DEG F
70
COND
500
MMHO/M
0
VERY LITTLE CLAY
Silt
w/
Trace
Cobble
(ML)
Well Graded
Gravel
w/
Silt
&
Sand
(GW-GM)
silty clay (CL)
CONSIDERABLE CLAY FROM ABOUT 5 TO 25 FT, ALTHOUGH NOT NOTED ON GEOLOGIC LOG
TEMPERATURE-CORRECTED CONDUCTIVITY
TEMPERATURE LOG
GAMMA LOG
RESISTIVITY

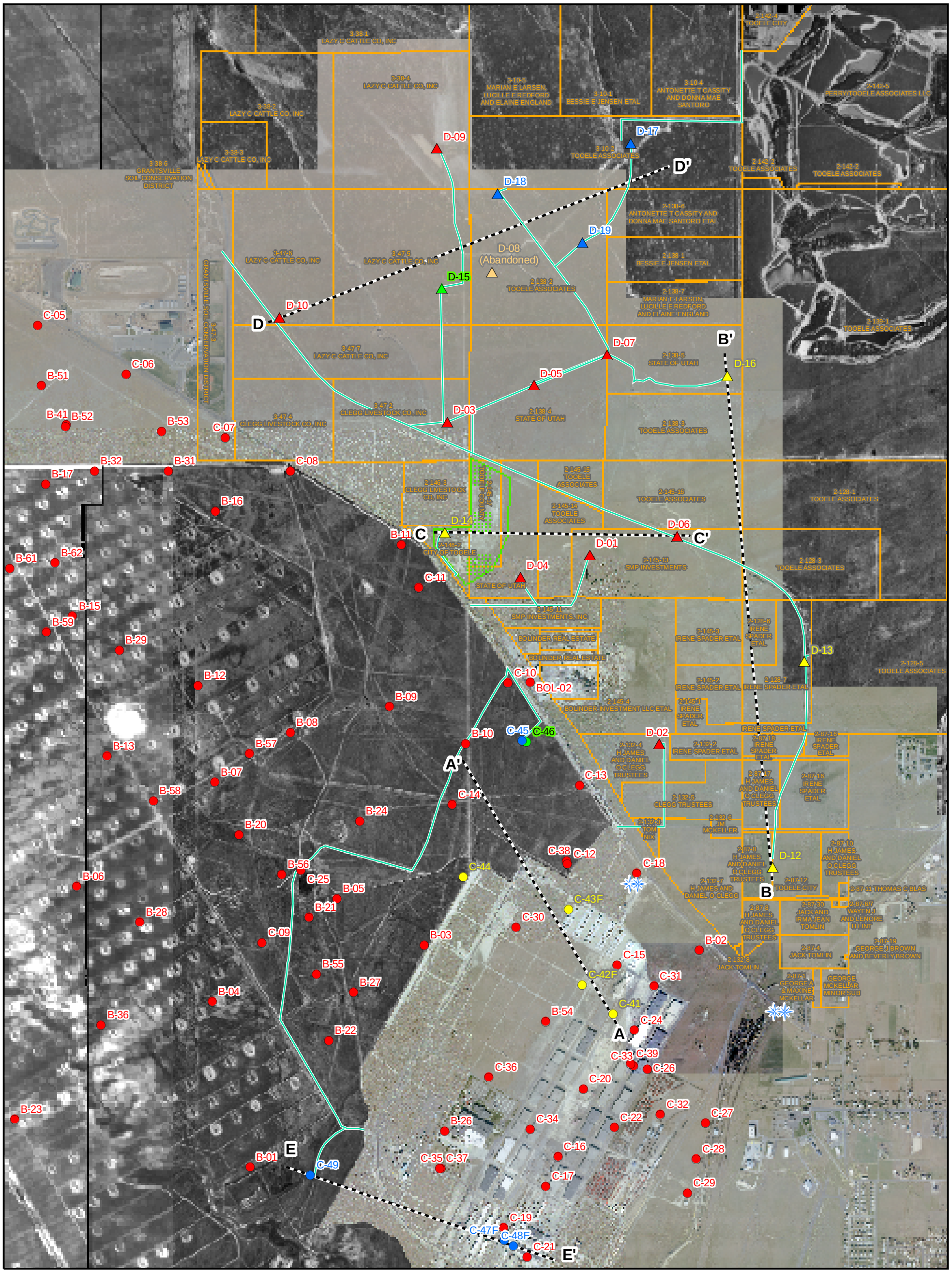

45
Well
50
Graded
55
Gravel
60
w/
65
Silt
70
and
75
Sand
80
(GWGM)
85
90
95
VERY UNIFORM RESISTIVITY RESPONSE
VERY UNIFORM CONDUCTIVITY RESPONSE


95
(GWGM)
100
Gravelly clay (CL)
105
Clayey Gravel (GC)
Silty clay (CL)
110
Clayey
115
Gravel
120
(GC)
125
130
Well Graded
135
Gravel
140
w/ Sand
145
(GW)
2
SOMEWHAT ELEVATED GAMMA RESPONSE FOR CLAYEY GRAVEL UNIT
BROAD RESISTIVITY LOW DUE TO CLAY-RICH INTERVAL FROM ~102–125 FT BGS
BROAD CONDUCTIVITY HIGH DUE TO CLAY-RICH INTERVAL FROM ~102–125 FT BGS



TOOL CALIBRATION D-17 09/10/05 11:25
TOOL 9512A
SERIAL NUMBER 1013

DATE	TIME	SENSOR	STANDARD	RESPONSE
Feb02,05	16:40:28	GAM(NAT)	21.311 [API-GR]	10.00 [CPS]
Feb02,05	16:40:28	GAM(NAT)	187.500 [API-GR]	127.00 [CPS]
Aug16,05	20:30:22	AP-COND	0.000 [MMHO/M]	55467.00 [CPS]
Aug16,05	20:30:22	AP-COND	705.000 [MMHO/M]	110724.00 [CPS]
Aug16,05	19:32:03	TEMP	33.500 [DEG F]	26878.00 [CPS]
Aug16,05	19:32:03	TEMP	134.400 [DEG F]	32180.00 [CPS]
Dec21,99	17:30:50	A	0.414 [ ]	
Dec21,99	17:30:50	B	Default [ ]	



LEGEND

Offsite Groundwater Monitoring Wells
- Phase I RFI Well
- Phase I RFI Well - Abandoned
- Phase II RFI - Installed Fall-Winter 2004
- Phase III RFI - Installed Summer 2005
- Proposed Phase II RFI Well

TEAD/UID Groundwater Monitoring Wells
- Existing Well
- Phase II RFI Well - Installed Fall-Winter 2004
- Phase II RFI Well - Installed Summer-Fall 2005
- Proposed Phase II RFI Well

- Survey Benchmark
- Approximate Phase II RFI Well Access Route
- Cross Section Line
- Former Landfill
- Parcel Boundaries / Owners

SWMU 58
PHASE II RFI
TOOELE ARMY DEPOT
TOOELE, UTAH

0 900 1,800
Feet

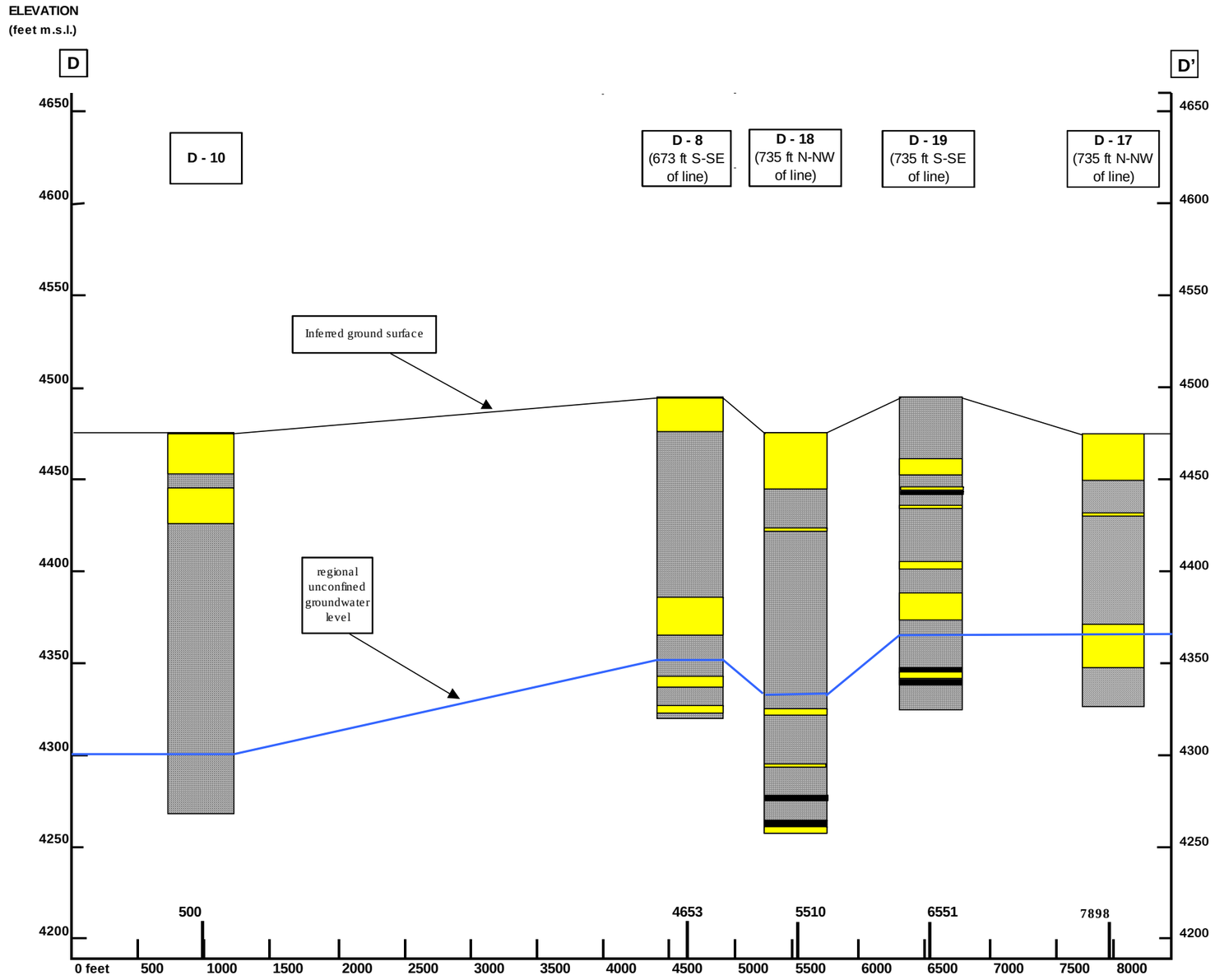
N

PLATE C-3

CROSS SECTION LOCATION DIAGRAM

w:\tooele\maps\well_comp_report_sept2005\cross_section_locations.mxd 01/09/06

PARSONS



VERTICAL EXAGERATION 6.6 X **GROUNDWATER ELEVATIONS FOR D-10, D-17, D-18, D-19 TAKEN SEPTEMBER, 2005** **D-8 TAKEN SEPTEMBER, 2002**

coarse grained sediments		Poorly graded sand and gravels (SP & GP) Silty sand and gravels (GM & SM)
fine grained sediment		Clayey sands and gravels (SC & GC) Lean clay with sand or gravel (CL) Fat clays (CH) and silts (ML)
cemented sediments		Chemically precipitated carbonate cementation of the sediment interstices

SLC5Q044.ppt

KLEINFELDER
PARSONS
Date: 09/30/2005
Project Number 48743.1B

TEAD Phase II RFI @ SWMU 58

HYDROSTRATIGRAPHIC CROSS SECTION D - D'

PLATE
C-4

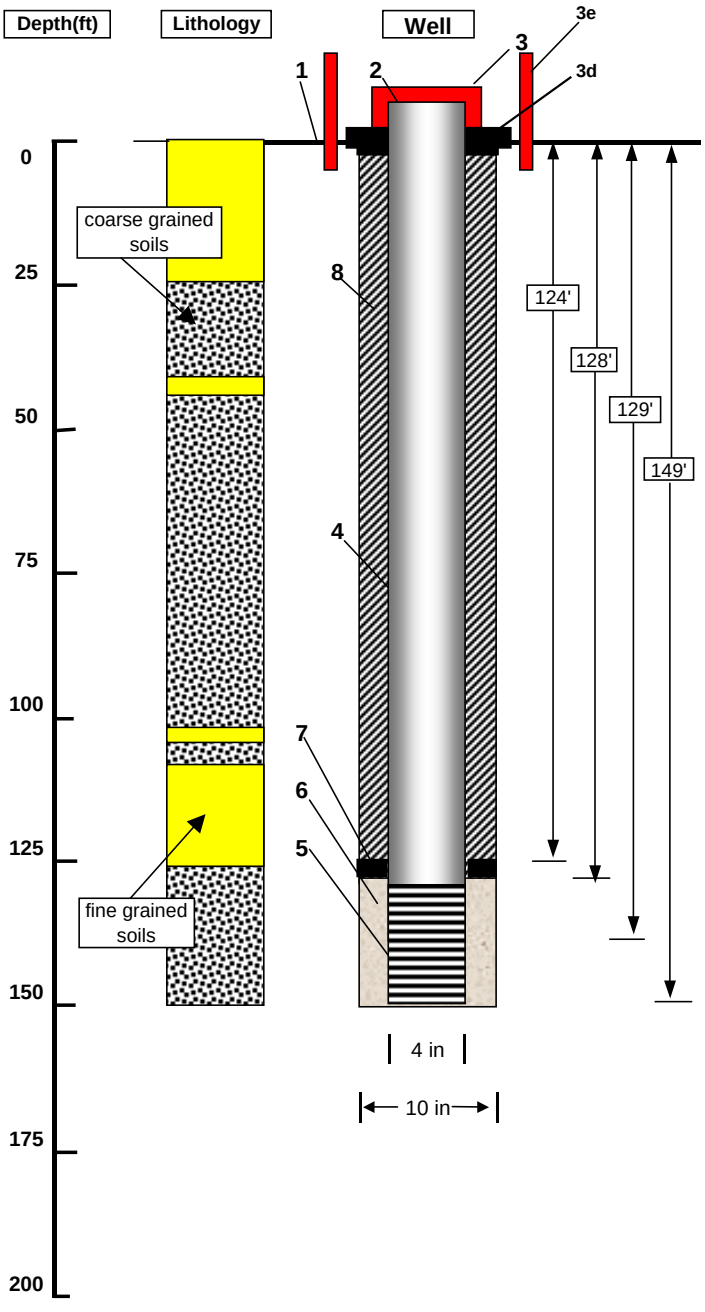
APPENDIX D

CONTRACTOR	WELL NUMBER	FIGURE
Kleinfelder/Parsons	D - 17	D-1

TEAD Phase II RFI - SWMU 58

MONITORING WELL INSTALLATION DATA RECORD

PROJECT :	**Phase II RFI - SWMU 58**	LOCATION :	**Tooele County, Utah**
DRILLING SUBCONTRACTOR :	**Layne Geoconstruction**	DRILLER:	**Tom Kern**
DRILLING METHOD AND EQUIPMENT:	**Becker Hammer-Drill Systems AP1000**	HELPERS:	**Jake Smith**
WATER LEVEL : **110.0 ft (TOC) on 7/13/05**	START**: 6/28/05** END: **6/30/05**	GEOLOGIST:	**Matt Ivers**



DRAWING NOT TO SCALE

1- Ground elevation at well : 4473.24 feet above sea level

2- Measuring point elevation : 4476.25 feet (top of well casing)

3- Surface completion casing :
- a) type / diameter (ID/ OD) : Steel - 10 inch ID / 10 3/8 inch OD
- b) height above ground : 3 feet
- c) length below ground : 3 feet
- d) type / quantity of sealant : Portland cement / 18 - 92.6 lb bags
- e) protective bollards : 4 - 4 inch steel concrete filled (4' ags - 2' bgs)

4- Well casing :
- a) type / diameter (ID/ OD) : Schedule 40 PVC / 4 inch
- b) height above ground : 3.01 feet
- c) length below ground : 149.97 feet
- d) type / quantity of sealant : see # 8
- e) well centralizers : none

5- Well screen :
- a) type / diameter (ID/ OD) : Schedule 40 PVC / 4 inch
- b) slot size : .010 inch
- c) lengths : 2 - 10 foot sections (129 to 149 feet bgs)

6- Well screen filter pack :
- a) type : #16 / 40 Colorado Silica Sand
- b) quantity used : 15 - 50 lb bags
- c) method of placement : poured from surface
- d) length : 127.8 to 150 feet bgs

7- Bentonite seal :
- a) type/ quantity : Cetco coated pellets / 2 - 5 gallon buckets
- b) length : 124.1 to 127.8 feet bgs

8- Grout :
- a) grout mix used per batch : 28 gal water/2 - 50 lb bags Pure Gold Bentonite
- b) method of placement : pumped from surface
- c) qty of well casing grout : 25 bags (approx 350 gallons)

Well development :
- a) method : bail and swab / pump and back flush
- b) time : 2 hour 35 minutes / 3 hours 11 minutes

Pumping tests :
- a) draw down / time : 0.20 feet / 32 minutes
- b) pumping rate : 10.98 to 11.21 gpm

SUMMARY OF WELL SURVEY DATA
TEAD Phase II RFI Groundwater Monitoring Wells

Well No.	Elevations (ft above MSL) Measuring Point	Brass Cap	Ground Surface	Top of Well Screen	Bottom of Well Screen	Coordinates for Measuring Point Northing	Coordinates for Measuring Point Easting	Section	Range	Township	PVC Riser Stickup
C-41	**4804.70**	**4802.32**	**4801.67**	**4445.68**	**4425.68**	**7364933.324**	**1406930.413**	30	R 4 W	T 3 S	3.03
C-42F	**4785.09**	**4785.52**	**4785.27**	**4445.27**	**4425.27**	**7365504.752**	**1406335.618**	19	R 4 W	T 3 S	-0.18
C-43F	**4754.87**	**4755.23**	**4755.21**	**4436.21**	**4416.21**	**7366968.52**	**1406061.58**	19	R 4 W	T 3 S	-0.34
C-44	**4722.81**	**4720.44**	**4719.82**	**4439.82**	**4419.82**	**7367591.88**	**1404021.61**	24	R 5 W	T 3 S	2.99
C-45	**4689.99**	**4687.78**	**4687.20**	**4438.20**	**4418.20**	**7370229.15**	**1405164.18**	19	R 4 W	T 3 S	2.79
C-47F	**4824.53**	**4825.08**	**4825.03**	**4476.08**	**4446.08**	**7360556.94**	**1404815.63**	30	R 4 W	T 3 S	-0.50
C-48F	**4823.67**	**4824.08**	**4824.03**	**4475.08**	**4445.08**	**7360431.77**	**1404989.18**	30	R 4 W	T 3 S	-0.36
C-49	**4710.02**	**4707.49**	**4706.90**	**4447.49**	**4427.49**	**7361802.01**	**1401065.35**	25	R 5 W	T 3 S	3.12
D-12	**4803.05**	**4800.56**	**4800.25**	**4455.25**	**4435.25**	**7367777.995**	**1410018.176**	20	R 4 W	T 3 S	2.80
D-13	**4720.05**	**4717.40**	**4717.32**	**4355.32**	**4335.32**	**7371760.079**	**1410629.706**	17	R 4 W	T 3 S	2.73
D-14	**4592.80**	**4590.93**	**4590.39**	**4335.39**	**4315.39**	**7374264.49**	**1403669.88**	13	R 5 W	T 3 S	2.41
D-16	**4580.11**	**4577.75**	**4577.20**	**4346.20**	**4326.20**	**7377300.289**	**1409139.940**	7	R 4 W	T 3 S	2.91
D-17	**4476.25**	**4473.81**	**4473.24**	**4343.24**	**4323.24**	**7381795.49**	**1407265.97**	6	R 4 W	T 3 S	3.01
D-18	**4476.07**	**4473.89**	**4473.20**	**4318.20** **4293.20**	**4298.20** **4268.20**	**7380823.93**	**1404691.14**	7	R 4 W	T 3 S	2.87
D-19	**4497.75**	**4495.75**	**4494.99**	**4346.99**	**4326.99**	**7379876.47**	**1406330.96**	7	R 4 W	T 3 S	2.76

MSL: mean sea level
F for selected well identifiers designates flush-mount surface completion.
Coordinates for measuring point are US State plane 1983, Utah Central 4302, NAD 1983 (CONUS), GEO1D96 (continental US)
All survey data generated by Ward Engineering of Salt Lake City, Utah

Note that well D-18 has two screened intervals.

APPENDIX E

VEOLIA Water

TOOELE ARMY DEPOT
MONITORING WELL SAMPLING DATA

Well ID: D-17	Initial Depth to Water: 110.00'
Sample ID:	Total Depth of Well: 152.98'
Duplicate ID:	Well Diameter: 4"
Sample Depth:	(a) 1 Casing Volume:
Date: 7/13/05	(b) 1 Filter Pack Water Volume:
Sampled By: JRA	(a) + (b) x 3 = Minimum Volume to Purge:
Method of ~~Sampling~~: Development S.S. Bailer	Method of Purging:

Time	Intake depth	Rate (gpm)	Cum. vol. (gal)	Temp (°F)	pH (units)	Conductivity (µS/cm)	Turbidity (NTUs)	TDS (g/L)	DO (mg/L)	ORP (mv)	Salinity (ppt)	Color & Sediment
0928	*1st	Bailer	3	68°	7.38	917	>1000					Cloudy Fine
0951	10th	Bailer	30	68.1°	7.60	922	>1000					Cloudy Fine
1036	20th	Bailer	60	70.3°	7.52	935	>1000					Cloudy none
1041	Surging well	w/surge	Block									
1122	30th	Bailer	90	74.1	7.68	996	>1000					Cloudy Fine
1127	Surging well	w/surge	block									
1203	40th	Bailer	120	71.5	7.56	927	>1000					Cloudy none

pH Calibration (select two)				Conductivity Meter Calibration		Turbidimeter Calibration	
Buffer solution	pH 4.0	pH 7.0	pH 10.0	Solution	990	Standard	5.32
Instrument reading		7.0 0857	10.0 0902	Instrument reading	990 0905	Instrument reading	5.32 0907

Notes: * Bailer holds 3 gal.

VEOLIA Water

TOOELE ARMY DEPOT
MONITORING WELL SAMPLING DATA

Well ID: D-17	Initial Depth to Water: 110.00
Sample ID:	Total Depth of Well: 152.98
Duplicate ID:	Well Diameter: 4"
Sample Depth:	(a) 1 Casing Volume: 28 gal
Date: 7/13/05	(b) 1 Filter Pack Water Volume:
Sampled By: GH	(a)+(b) x 3= Minimum Volume to Purge: 84 gal
Method of ~~Sampling~~ Development: 4" Submersible	Method of Purging: 4" Submersible

Time	Intake depth	Rate (gpm)	Cum. vol. (gal)	Temp (°F)	pH (units)	Conductivity (µS/cm)	Turbidity (NTUs)	TDS (g/L)	DO (mg/L)	ORP (mv)	Salinity (ppt)	Color & Sedimen
1338	152'	11.07	0									
1346	152'	11.07	88	74.8	7.35	974	58.0					cloudy none
1354	152'	11.32	176	69.3	7.38	905	57.1					cloudy none
1408	152'	11.01	264	69.9	7.42	901	40.6					cloudy none
1409	Pump	off	for Bac	kflush	and	Recovery	Portion	off	pump	test		
1520	Parameters of	ter Backflush		69.1	7.51	894	190					cloudy none
1528	152'	11.07	352	68.2	7.48	889	26.2					cloudy none
1536	152'	11.07	440	67.4	7.48	885	10.7					clear none
1544	152'	11.13	528	68.1	7.50	887	6.01					clear none
1545	Pump	off										

pH Calibration (select two)				Conductivity Meter Calibration		Turbidimeter Calibration	
Buffer solution	pH 4.0	pH 7.0	pH 10.0	Solution		Standard	
Instrument reading				Instrument reading		Instrument reading	

Notes:

38

VEOLIA Water

TOOELE ARMY DEPOT
MONITORING WELL SAMPLING DATA

Well ID: D-17	Initial Depth to Water: 110.00
Sample ID:	Total Depth of Well: 152.98
Duplicate ID:	Well Diameter: 4"
Sample Depth:	(a) 1 Casing Volume: 28 gal
Date: 7/14/05	(b) 1 Filter Pack Water Volume:
Sampled By: JRD	(a)+(b)x 3= Minimum Volume to Purge: 84 gal
Method of ~~Sampling:~~ Development 4" Submersible	Method of ~~Purging:~~ Development 4" Submersible

Time	Intake depth	Rate (gpm)	Cum. vol. (gal)	Temp (°F)	pH (units)	Conductivity (µS/cm)	Turbidity (NTUs)	TDS (g/L)	DO (mg/L)	ORP (mv)	Salinity (ppt)	Color & Sediment
0907	152'	11.21	528									
0915	152'	11.01	616	65.8	7.40	982	2.00					clear none
0923	152'	11.07	704	64.5	7.45	961	2.24					clear none
0924	Pump	off	Backfl	ushed	5x							
0930	Parameters after		Backflush	63.7	7.53	957	8.44					clear none
0938	152'	11.01	792	64.3	7.40	963	3.05					clear none
0939	Pump	off	Backflushed	5x								
0947	Parameters after		Backflush	65.3	7.38	976	7.37					clear none
0955	152'	11.07	880	65.4	7.39	977	2.52					clear none
1003	152'	11.07	968	65.8	7.38	978	1.79					clear none
1011	152'	11.01	1,056	65.7	7.37	975	1.51					clear none

pH Calibration (select two)				Conductivity Meter Calibration		Turbidimeter Calibration	
Buffer solution	pH 4.0	pH 7.0	pH 10.0	Solution	990	Standard	5.32
Instrument reading		7.0 0856	10.0 0859	Instrument reading	990 0902	Instrument reading	5.32 0904

Notes: 8 88

Wednesday July 13, 2005
Weather: Sunny, warm ~90°
Wind: None

0752	Arrive at Gates for access to D-17
0819	Arrive at D-17. Parsons and MP Environmental on-site as well. Start Set up for Development SWL 110.00' TD 152.98'
0850	Calibrated Equipment
0928	1st Bailer removed, Parameters Taken
0951	10th Bailer removed, Parameters Taken
1036	20th Bailer removed, Parameters Taken
1041	Surging well w/Surge Block
1122	30th Bailer removed, Parameters Taken
1127	Surging well w/ surge Block
1203	40th Bailer removed, Parameters Taken
1247	Lowering pump and piping.
1337	Pump on, establishing Flow, Pump Test also started
1338	Flow established at 11 gpm, Intake 152.00
1409	Pump off, for Recovery portion of pump test, Also backflushing well
1520	Pump on, Parameters Taken after backflush
1545	Pump off for Today, Decon Equipment and breaking down equipment
1623	Leaving D-17 → GWTP

Thursday July 14, 2005
Weather: Clear, Hot ~90°
Wind: None

0847	Arrive at D-17 and Start Setup
0854	Calibrated Equipment
0906	Pump on, establishing flow
0907	Flow establish at 19 gpm, Intake 152'
0924	Pump off, Backflushed 5x
0939	Pump off, Backflushed 5x
1011	Pump off, All Parameters stable, Turbidity <5 NTU's
1021	Removing pump and piping
1112	Decon Equipment
1236	Leaving D-17 → GWTP

Figure C-2

AQUIFER TEST DATA

Owner Tooele Army Depot Address _____ County Tooele State _____

Date 7/13/05 Company performing test Parsons/Veolia Water Measured by Jeff Hammann

No. D-17 Distance from pumping well _____ Type of test Constant Pumping Rate Drawdown / Recovery Test No. _____

Measuring equipment _____

Time Data
Pump on: Date 7/13 Time 1337 (t)
Pump off: Date 7/13 Time 1409 (t')
Duration of aquifer test:
Pumping 32 min Recovery _____

Water Level Data
Static water level _____
Measuring point _____
Elevation of measuring point _____

Discharge Data
How Q measured _____
Depth of pump/air line _____
Previous pumping? Yes ____ No ____
Duration _____ End _____

Comments on factors affecting test data

Date	Clock time	Time since pump started t	Time since pump stopped t'	t/t'		Depth to water / Water level measurement	Correction or Conversion	Water level	Water level change s or s'		Discharge measurement	(gpm) Rate		
7/13	1337					110.05								Pump on
	1338	1				110.25						11.07		
	1339	2				110.25						11.21		
	1340	3				110.25						10.98		
	1345	8				110.25						11.07		
	1350	13				110.25						11.01		
	1355	18				110.25						11.07		
	1400	23				110.25						11.07		
	1405	28				110.25						11.01		
	1409	32				110.25						10.98		
	1410	33	1			110.00								
	1411	34	2			110.04								
	1412	35	3			110.05								
	1415	38	6			110.05								
	1420	43	11			110.05								
	1425	48	16			110.05								
	1430	53	21			110.05								

APPENDIX F

September 15, 2005
Weather: Clear, Cool ~70°
Wind: Breeze from South

1012 Arrive at C-45 and start Setup
SWL 229.96 (BTOC)

1150 Installed 5 samplers, 3 at 249 ft bgs, Top of Sampler, 1 at 259 ft bgs (Top) and 1 at 269 ft bgs bottom of Sampler

1205 Leaving C-45 → D-17

1337 Arrive at D-17 and start Setup
SWL 112.53 (BTOC)

1346 Installed 1 Sampler at 140 ft bgs, Top of Sampler

1354 Leaving D-17 → D-19

1357 Arrive at D-19 and start setup
SWL 133.00 (BTOC)

1419 Installed 5 Samplers. 3 at 148 ft bgs, Top of Samplers, 1 at 158 ft bgs, Top of Sampler and 1 at 168 ft bgs, bottom of sampler

1431 Leaving D-19 → D-18
Arrive at D-18 and start Setup
SWL 142.98 (BTOC)

1521 Installed 8 Samplers 3 at 155 ft bgs, Top of Sampler, 1 at 165 ft bgs, Top of Sampler and 1 at 175 ft bgs, bottom of Sampler. 1 at 180 ft bgs Top of Sampler, 1 at 192 ft bgs, Top of Sampler, and 1 at 205 ftbgs, Bottom of Sampler

1542 Leaving D-18 → GWTP

Nov 03 05 12:26p

Tuesday October 4, 2005
Weather: Cloudy, Rain ~ 60°
Wind: None

0732 Arrive at ~~C~~SH D-19 and preparing to Sample
0754 Removing Samplers
15 VOA Samples Taken 40 mL w/HCL
(0805) (3) D-19FD001 (148')
0758 (3) D-19GW001 (148')
0758 (3) D-19FR001 (148')
0807 (3) D-19GW002 (158')
0810 (3) D-19GW003 (168')
0821 Leaving D-19 → D-17
0826 Arrive at D-17 and preparing to Sample
0834 Removing Samplers
JG ~~0836~~ 3 VOA Samples Taken 40 mL w/HCL
0836 (3) ~~GW001~~SH D-17GW001 (140')
0843 Leaving D-17 → D-18
0849 Arrive at D-18 and preparing to Sample
18 VOA's Taken 40 mL w/HCL
0920 (3) D-18GW007 (155')
0924 (3) D-18GW008 (165')
0927 (3) D-18GW009 (175')
0930 (3) D-18GW010 (180')
0933 (3) D-18GW011 (192')
0936 (3) D-18GW012 (205')
0952 Leaving D-18 → GWTP
1502 Arrive at C-48F and preparing to Sample
1512 Removing samplers
12 VOA Samples Taken 40mL w/HCL
1516 (3) C-48FGW001 (355')
1519 (3) C-48FGW002 (363')
1522 (3) C-48FGW003 (371')
1526 (3) C-48FGW004 (379')

Nov 03 05 12:27p

ANALYTICAL QUALITY CONTROL SUMMARY

Samples were collected in accordance with the analytical and quality control specifications of the Final Phase II RCRA Facility Investigation SWMU-58 Work Plan (Parsons, 2003) and the Tooele Industrial Area Project CDQMP and QAPP. Passive diffusion bag samplers were deployed in well D-17 on September 15, 2005. Samples including field quality control samples were collected on October 4, 2005 and submitted to Severn Trent Laboratories, a Utah and USACE-certified analytical laboratory.

Results were received and submitted to third party data review by Synectics. Data review included checks of the following data quality elements: Holding times, continuing calibration verification, method blanks, field blanks, laboratory control sample recovery, matrix spike and matrix spike duplicate recovery and precision, surrogate recovery, and field duplicate precision. There were minor quality control issues found in the data package for D-17. The TCE results were J/UJ flagged for reanalysis holding times >14 days. 1,1-dichloroethene results were J/UJ flagged due to LCS % recovery issues. All data is suitable for use. Analytical and data validation reports are attached.

SEVERN TRENT STL®

STL Sacramento
880 Riverside Parkway
West Sacramento, CA 95605

Tel: 916 373 5600 Fax: 916 372 1059
www.stl-inc.com

October 30, 2005

STL SACRAMENTO PROJECT NUMBER: G5J070276
PO/CONTRACT: 744139-30012

Jan Barbas
Parsons
406 West South Jordan Parkway
Suite 300
South Jordan, UT 84095

Dear Mr. Barbas,

This report contains the analytical results for the samples received under chain of custody by STL Sacramento on October 6, 2005. These samples are associated with your Tooele project.

The test results in this report meet all NELAC requirements for parameters that accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The case narrative is an integral part of this report.

If you have any questions, please feel free to call me at (916) 374-4427.

Sincerely,

Nilo Ligi
Project Manager

TABLE OF CONTENTS

STL SACRAMENTO PROJECT NUMBER G5J070276

CASE NARRATIVE

STL SACRAMENTO PROJECT NUMBER G5J070276

General Comments

Samples were received at 2 degrees C.

WATER, 8260B, Volatile Organics

The samples were analysed for Volatile Organics by Method 8260B (GC-MS). Detection is achieved by purge and trap gas chromatography – Mass Spectrometry. All QC criteria were met except as noted below.

Samples 6, 8, 9, 10-14

Samples were all analyzed before the holding time expired. However, review of the data showed that 1 or more analytes were present in the sample at levels outside of the instrument calibration range. As a consequence, these samples were reanalyzed at dilutions, but the reanalysis was past the holding time date. Both sets of data will be reported.

Due to possible carry over contribution sample G5J070276-14 was reanalyzed two days beyond recommended hold time. Results for both analyses are reported.

There were no other anomalies associated with this project.

SEVERN TRENT STL

ACCREDITED IN ACCORDANCE WITH NELAP

STL Sacramento Certifications/Accreditations

Certifying State	Certificate #	Certifying State	Certificate #
Alaska	UST-055	Oregon*	CA 200005
Arizona	AZ0616	Pennsylvania	68-00472
Arkansas	04-067-0	South Carolina	87014002
California	01169CA	Texas	TX 052004A
Colorado	NA	Utah*	QUAN1
Connecticut	PH-0691	Virginia	00178
Florida*	E87570	Washington	C087
Georgia	960	West Virginia	9930C, 334
Hawaii	NA	Wisconsin	998204680
Louisiana	01944	WBENC	NA
Michigan	9947	USACE	NA
Nevada	CA44	USDA Foreign Plant	P330-05-00205
New Jersey*	CA005	USDA Foreign Soil	S-46613
New York*	11666		

*NELAP accredited. A more detailed parameter list is available upon request. Update 1/27/05

QC Parameter Definitions

QC Batch: The QC batch consists of a set of up to 20 field samples that behave similarly (i.e., same matrix) and are processed using the same procedures, reagents, and standards at the same time.

Method Blank: An analytical control consisting of all reagents, which may include internal standards and surrogates, and is carried through the entire analytical procedure. The method blank is used to define the level of laboratory background contamination.

Laboratory Control Sample and Laboratory Control Sample Duplicate (LCS/LCSD): An aliquot of blank matrix spiked with known amounts of representative target analytes. The LCS (and LCSD as required) is carried through the entire analytical process and is used to monitor the accuracy of the analytical process independent of potential matrix effects. If an LCSD is performed, it may also used to evaluate the precision of the process.

Duplicate Sample (DU): Different aliquots of the same sample are analyzed to evaluate the precision of an analysis.

Surrogates: Organic compounds not expected to be detected in field samples, which behave similarly to target analytes. These are added to every sample within a batch at a known concentration to determine the efficiency of the sample preparation and analytical process.

Matrix Spike and Matrix Spike Duplicate (MS/MSD): An MS is an aliquot of a matrix fortified with known quantities of specific compounds and subjected to an entire analytical procedure in order to indicate the appropriateness of the method for a particular matrix. The percent recovery for the respective compound(s) is then calculated. The MSD is a second aliquot of the same matrix as the matrix spike, also spiked, in order to determine the precision of the method.

Isotope Dilution: For isotope dilution methods, isotopically labeled analogs (internal standards) of the native target analytes are spiked into the sample at time of extraction. These internal standards are used for quantitation, and monitor and correct for matrix effects. Since matrix effects on method performance can be judged by the recovery of these analogs, there is little added benefit of performing MS/MSD for these methods. MS/MSD are only performed for client or QAPP requirements.

Control Limits: The reported control limits are either based on laboratory historical data, method requirements, or project data quality objectives. The control limits represent the estimated uncertainty of the test results.

Sample Summary
G5J070276

WO#	Sample #	Client Sample ID	Sampling Date	Received Date
HL9K7	1	D-19FD001	10/4/2005 08:05 AM	10/6/2005 09:10 AM
HL9LG	2	D-19GW001	10/4/2005 07:58 AM	10/6/2005 09:10 AM
HL9LR	3	D-19GW002	10/4/2005 08:07 AM	10/6/2005 09:10 AM
HL9LX	4	D-19GW003	10/4/2005 08:10 AM	10/6/2005 09:10 AM
HL9L4	5	D-17GW001	10/4/2005 08:36 AM	10/6/2005 09:10 AM
HL9L5	6	C-45FD001	10/3/2005 08:50 AM	10/6/2005 09:10 AM
HL9L8	7	C-45GW001	10/3/2005 08:41 AM	10/6/2005 09:10 AM
HL9MD	8	C-45GW002	10/3/2005 09:03 AM	10/6/2005 09:10 AM
HL9MH	9	C-45GW003	10/3/2005 09:08 AM	10/6/2005 09:10 AM
HL9MJ	10	C-48FGW001	10/4/2005 03:16 PM	10/6/2005 09:10 AM
HL9ML	11	C-48FGW002	10/4/2005 03:19 PM	10/6/2005 09:10 AM
HL9MQ	12	C-48FGW003	10/4/2005 03:22 PM	10/6/2005 09:10 AM
HL9MX	13	C-48FGW004	10/4/2005 03:26 PM	10/6/2005 09:10 AM
HL9M3	14	D-18GW007	10/4/2005	10/6/2005 09:10 AM
HL9NL	15	D-18GW008	10/4/2005	10/6/2005 09:10 AM
HL9NP	16	D-18GW009	10/4/2005	10/6/2005 09:10 AM
HL9NT	17	D-18GW010	10/4/2005	10/6/2005 09:10 AM
HL9NW	18	D-18GW011	10/4/2005	10/6/2005 09:10 AM
HL9N3	19	D-18GW012	10/4/2005	10/6/2005 09:10 AM
HL9N5	20	PARSTB12	10/3/2005 07:00 AM	10/6/2005 09:10 AM

Notes(s):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity, pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight

SAMPLE RECEIPT RECORDS

CHAIN OF CUSTODY

PARSONS

COC ID: 1002

Project Name:	Tooele Industrial Area	**Contractor:**	Parsons-SLC
Project Manager:	Ed Staes	**Installation:**	TEAD
Sample Coordinator:	Kurt Alloway	**Sample Program:**	

Parsons Point of Contact: Jan Barbas
406 W. South Jordan Parkway
Suite 300
South Jordan, Utah 84095
(801) 572-5999 FAX (801) 572-9069

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End. Depth	Total Conts.
D-17	D-17	D-17GW001	WG	DF	N	1	10/4/05	0836	JNB	140'	-	3

Analysis	Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot
VOC	SVLS					

Remarks:

RECEIVED IN GOOD CONDITION
UNDER COC

:T 0 : 2005

INI JS

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
[signature] To: FedEx	10/5/05 1000 10/5/05 1630	[signature]	10/5/05 1000 10/6/05 1440

To:STL Laboratories, 880 Riverside Pkwy, W. Sacramento, CA, 95605 (916) 373-5600

Friday, September 16, 2005

G5J070276

CHAIN OF CUSTODY

PARSONS

COC ID: 1018

Project Name:	Tooele Industrial Area	**Contractor:**	Parsons-SLC
Project Manager:	Ed Staes	**Installation:**	TEAD
Sample Coordinator:	Kurt Alloway	**Sample Program:**	

Parsons Point of Contact: Jan Barbas
406 W. South Jordan Parkway
Suite 300
South Jordan, Utah 84095
(801) 572-5999 FAX (801) 572-9069

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End. Depth	Total Conts.
	FIELDQC	PARSTB12	WQ	NA	TB	1	10/3/05	0700		0	0	2

Analysis	Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot
VOC	SVLS					

Remarks:

RECEIVED IN GOOD CONDITION
UNDER COC
OCT 06 2005
INI 15

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
	10/5/05 0800		10/5/05 0800
To: FedEx	10/5/05 1630		10/6/05 1440

SEVERN TRENT **STL**

LOT RECEIPT CHECKLIST
STL Sacramento

CLIENT Parsons PM NV LOG # 34926

LOT# (QUANTIMS ID) G5J070276 QUOTE# 62837 LOCATION WB

	Initials	Date
	JS	10/6/05

DATE RECEIVED 10/6/05 TIME RECEIVED 0910

DELIVERED BY
- [X] FEDEX
- [ ] CA OVERNIGHT
- [ ] CLIENT
- [ ] AIRBORNE
- [ ] GOLDENSTATE
- [ ] DHL
- [ ] UPS
- [ ] BAX GLOBAL
- [ ] GO-GETTERS
- [ ] STL COURIER
- [ ] COURIERS ON DEMAND
- [ ] OTHER

CUSTODY SEAL STATUS [X] INTACT [ ] BROKEN [ ] N/A

CUSTODY SEAL #(S) ~~396684~~ JS 396684, 438930

SHIPPPING CONTAINER(S) [ ] STL [X] CLIENT [ ] N/A

TEMPERTURE RECORD (IN °C) IR 1 [X] 3 [ ] [ ] OTHER ____

COC #(S) N/A

TEMPERATURE BLANK Observed: 2 Corrected: 2

SAMPLE TEMPERATURE

Observed: 2 2 3 Average: 2 Corrected Average: 2

COLLECTOR'S NAME: [ ] Verified from COC [X] Not on COC

pH MEASURED [ ] YES [ ] ANOMALY [X] N/A

LABELED BY	CO	10:7.05
LABELS CHECKED BY		
PEER REVIEW ____ [X] NA		

SHORT HOLD TEST NOTIFICATION

SAMPLE RECEIVING
- WETCHEM [X] N/A
- VOA-ENCORES [X] N/A

[ ] METALS NOTIFIED OF FILTER/PRESERVE VIA VERBAL & EMAIL [X] N/A

[X] COMPLETE SHIPMENT RECEIVED IN GOOD CONDITION WITH APPROPRIATE TEMPERATURES, CONTAINERS, PRESERVATIVES [ ] N/A

[ ] Clouseau [ ] TEMPERATURE EXCEEDED (2 °C – 6 °C)*1 [X] N/A

[ ] WET ICE [ ] BLUE ICE [ ] GEL PACK [ ] NO COOLING AGENTS USED [ ] PM NOTIFIED

Notes: ____

*1 Acceptable temperature range for State of Wisconsin samples is ≤ 4°C.

WATER, 8260B, Volatile Organics

Parsons Corporation

Client Sample ID: D-17GW001

GC/MS Volatiles

Lot-Sample #...: G5J070276-005 Work Order #...: HL9L41AA Matrix.....: WG
Date Sampled...: 10/04/05 Date Received..: 10/06/05
Prep Date.....: 10/18/05 Analysis Date..: 10/18/05
Prep Batch #...: 5292173
Dilution Factor: 1 Method.....: SW846 8260B

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Benzene	ND	1.0	ug/L	0.13
Carbon tetrachloride	**0.43 J**	**1.0**	**ug/L**	**0.15**
Chloroethane	ND	1.0	ug/L	0.34
Chloroform	**0.18 J**	**1.0**	**ug/L**	**0.12**
1,1-Dichloroethane	ND	1.0	ug/L	0.10
1,2-Dichloroethane	ND	1.0	ug/L	0.22
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.10
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.11
1,1-Dichloroethene	ND	1.0	ug/L	0.36
1,2-Dichloropropane	ND	1.0	ug/L	0.15
Ethylbenzene	ND	1.0	ug/L	0.27
Methylene chloride	ND	2.0	ug/L	0.35
Naphthalene	ND	1.0	ug/L	0.15
Tetrachloroethene	ND	1.0	ug/L	0.38
Toluene	ND	1.0	ug/L	0.25
1,1,1-Trichloroethane	ND	1.0	ug/L	0.41
1,1,2-Trichloroethane	ND	1.0	ug/L	0.31
Trichloroethene	**3.8**	**1.0**	**ug/L**	**0.31**
Vinyl chloride	ND	1.0	ug/L	0.12
m-Xylene & p-Xylene	ND	1.0	ug/L	0.18
o-Xylene	ND	1.0	ug/L	0.10

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	100	(70 - 130)
1,2-Dichloroethane-d4	101	(70 - 130)
Toluene-d8	108	(70 - 130)
Dibromofluoromethane	108	(70 - 130)

NOTE(S):

J Estimated result. Result is less than RL.

Parsons Corporation

Client Sample ID: PARSTB12

GC/MS Volatiles

Lot-Sample #...: G5J070276-020 Work Order #...: HL9N51AA Matrix.....: WQ
Date Sampled...: 10/03/05 Date Received..: 10/06/05
Prep Date.....: 10/17/05 Analysis Date..: 10/17/05
Prep Batch #...: 5291444
Dilution Factor: 1 Method.....: SW846 8260B

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Benzene	ND	1.0	ug/L	0.13
Carbon tetrachloride	ND	1.0	ug/L	0.15
Chloroethane	ND	1.0	ug/L	0.34
Chloroform	ND	1.0	ug/L	0.12
1,1-Dichloroethane	ND	1.0	ug/L	0.10
1,2-Dichloroethane	ND	1.0	ug/L	0.22
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.10
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.11
1,1-Dichloroethene	ND	1.0	ug/L	0.36
1,2-Dichloropropane	ND	1.0	ug/L	0.15
Ethylbenzene	ND	1.0	ug/L	0.27
Methylene chloride	ND	2.0	ug/L	0.35
Naphthalene	ND	1.0	ug/L	0.15
Tetrachloroethene	ND	1.0	ug/L	0.38
Toluene	ND	1.0	ug/L	0.25
1,1,1-Trichloroethane	ND	1.0	ug/L	0.41
1,1,2-Trichloroethane	ND	1.0	ug/L	0.31
Trichloroethene	ND	1.0	ug/L	0.31
Vinyl chloride	ND	1.0	ug/L	0.12
m-Xylene & p-Xylene	ND	1.0	ug/L	0.18
o-Xylene	ND	1.0	ug/L	0.10

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	104	(70 - 130)
1,2-Dichloroethane-d4	93	(70 - 130)
Toluene-d8	107	(70 - 130)
Dibromofluoromethane	98	(70 - 130)

QC DATA ASSOCIATION SUMMARY

G5J070276

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WG	SW846 8260B		5292173	
002	WG	SW846 8260B		5292173	
003	WG	SW846 8260B		5292173	
004	WG	SW846 8260B		5292173	
005	WG	SW846 8260B		5292173	
006	WG	SW846 8260B		5291444	5291272
007	WG	SW846 8260B		5291444	5291272
008	WG	SW846 8260B		5291444	5291272
009	WG	SW846 8260B		5291444	5291272
010	WG	SW846 8260B		5292173	
011	WG	SW846 8260B		5292173	
012	WG	SW846 8260B		5292173	
013	WG	SW846 8260B		5292173	
014	WG	SW846 8260B		5292173	
015	WG	SW846 8260B		5292173	
016	WG	SW846 8260B		5292302	
017	WG	SW846 8260B		5292302	
018	WG	SW846 8260B		5292302	
019	WG	SW846 8260B		5292302	
020	WQ	SW846 8260B		5291444	5291272

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: G5J070276 **Work Order #...:** HM1J21AA **Matrix.....:** WATER
MB Lot-Sample #: G5J180000-444

Prep Date.....: 10/17/05
Analysis Date..: 10/17/05 **Prep Batch #...:** 5291444
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Benzene	ND	1.0	ug/L	SW846 8260B
Carbon tetrachloride	ND	1.0	ug/L	SW846 8260B
Chloroethane	ND	1.0	ug/L	SW846 8260B
Chloroform	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethane	ND	1.0	ug/L	SW846 8260B
1,2-Dichloroethane	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethene	ND	1.0	ug/L	SW846 8260B
cis-1,2-Dichloroethene	ND	1.0	ug/L	SW846 8260B
trans-1,2-Dichloroethene	ND	1.0	ug/L	SW846 8260B
1,2-Dichloropropane	ND	1.0	ug/L	SW846 8260B
Ethylbenzene	ND	1.0	ug/L	SW846 8260B
Methylene chloride	ND	2.0	ug/L	SW846 8260B
Naphthalene	ND	1.0	ug/L	SW846 8260B
Tetrachloroethene	ND	1.0	ug/L	SW846 8260B
Toluene	ND	1.0	ug/L	SW846 8260B
1,1,1-Trichloroethane	ND	1.0	ug/L	SW846 8260B
1,1,2-Trichloroethane	ND	1.0	ug/L	SW846 8260B
Trichloroethene	ND	1.0	ug/L	SW846 8260B
Vinyl chloride	ND	1.0	ug/L	SW846 8260B
o-Xylene	ND	1.0	ug/L	SW846 8260B
m-Xylene & p-Xylene	ND	1.0	ug/L	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	105	(70 - 130)
1,2-Dichloroethane-d4	89	(70 - 130)
Toluene-d8	102	(70 - 130)
Dibromofluoromethane	92	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: G5J070276 **Work Order #...:** HM2P71AA **Matrix.....:** WATER
MB Lot-Sample #: G5J190000-173

Prep Date.....: 10/18/05
Analysis Date..: 10/18/05 **Prep Batch #...:** 5292173
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Benzene	ND	1.0	ug/L	SW846 8260B
Carbon tetrachloride	ND	1.0	ug/L	SW846 8260B
Chloroethane	ND	1.0	ug/L	SW846 8260B
Chloroform	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethane	ND	1.0	ug/L	SW846 8260B
1,2-Dichloroethane	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethene	ND	1.0	ug/L	SW846 8260B
cis-1,2-Dichloroethene	ND	1.0	ug/L	SW846 8260B
trans-1,2-Dichloroethene	ND	1.0	ug/L	SW846 8260B
1,2-Dichloropropane	ND	1.0	ug/L	SW846 8260B
Ethylbenzene	ND	1.0	ug/L	SW846 8260B
Methylene chloride	ND	2.0	ug/L	SW846 8260B
Naphthalene	ND	1.0	ug/L	SW846 8260B
Tetrachloroethene	ND	1.0	ug/L	SW846 8260B
Toluene	ND	1.0	ug/L	SW846 8260B
1,1,1-Trichloroethane	ND	1.0	ug/L	SW846 8260B
1,1,2-Trichloroethane	ND	1.0	ug/L	SW846 8260B
Trichloroethene	ND	1.0	ug/L	SW846 8260B
Vinyl chloride	ND	1.0	ug/L	SW846 8260B
o-Xylene	ND	1.0	ug/L	SW846 8260B
m-Xylene & p-Xylene	ND	1.0	ug/L	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	102	(70 - 130)
1,2-Dichloroethane-d4	96	(70 - 130)
Toluene-d8	105	(70 - 130)
Dibromofluoromethane	102	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: G5J070276 **Work Order #...:** HM3AQ1AA **Matrix.....:** WATER
MB Lot-Sample #: G5J190000-302

Prep Date.....: 10/18/05
Analysis Date..: 10/18/05 **Prep Batch #...:** 5292302
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Benzene	ND	1.0	ug/L	SW846 8260B
Carbon tetrachloride	ND	1.0	ug/L	SW846 8260B
Chloroethane	ND	1.0	ug/L	SW846 8260B
Chloroform	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethane	ND	1.0	ug/L	SW846 8260B
1,2-Dichloroethane	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethene	ND	1.0	ug/L	SW846 8260B
cis-1,2-Dichloroethene	ND	1.0	ug/L	SW846 8260B
trans-1,2-Dichloroethene	ND	1.0	ug/L	SW846 8260B
1,2-Dichloropropane	ND	1.0	ug/L	SW846 8260B
Ethylbenzene	ND	1.0	ug/L	SW846 8260B
Methylene chloride	ND	2.0	ug/L	SW846 8260B
Naphthalene	ND	1.0	ug/L	SW846 8260B
Tetrachloroethene	ND	1.0	ug/L	SW846 8260B
Toluene	ND	1.0	ug/L	SW846 8260B
1,1,1-Trichloroethane	ND	1.0	ug/L	SW846 8260B
1,1,2-Trichloroethane	ND	1.0	ug/L	SW846 8260B
Trichloroethene	ND	1.0	ug/L	SW846 8260B
Vinyl chloride	ND	1.0	ug/L	SW846 8260B
o-Xylene	ND	1.0	ug/L	SW846 8260B
m-Xylene & p-Xylene	ND	1.0	ug/L	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	114	(70 - 130)
1,2-Dichloroethane-d4	125	(70 - 130)
Toluene-d8	119	(70 - 130)
Dibromofluoromethane	122	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: G5J070276 **Work Order #...:** HM1J21AC **Matrix.....:** WATER
LCS Lot-Sample#: G5J180000-444
Prep Date.....: 10/17/05 **Analysis Date..:** 10/17/05
Prep Batch #...: 5291444
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzene	**91**	**(80 - 120)**	**SW846 8260B**
1,1-Dichloroethene	**89**	**(80 - 120)**	**SW846 8260B**
Toluene	**95**	**(80 - 120)**	**SW846 8260B**
Trichloroethene	**88**	**(80 - 120)**	**SW846 8260B**
Chlorobenzene	**99**	**(80 - 120)**	**SW846 8260B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	107	(70 - 130)
1,2-Dichloroethane-d4	88	(70 - 130)
Toluene-d8	105	(70 - 130)
Dibromofluoromethane	97	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: G5J070276 **Work Order #...:** HM1J21AC **Matrix.....:** WATER
LCS Lot-Sample#: G5J180000-444
Prep Date.....: 10/17/05 **Analysis Date..:** 10/17/05
Prep Batch #...: 5291444
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzene	**20.0**	**18.2**	**ug/L**	**91**	**SW846 8260B**
1,1-Dichloroethene	**20.0**	**17.8**	**ug/L**	**89**	**SW846 8260B**
Toluene	**20.0**	**18.9**	**ug/L**	**95**	**SW846 8260B**
Trichloroethene	**20.0**	**17.7**	**ug/L**	**88**	**SW846 8260B**
Chlorobenzene	**20.0**	**19.8**	**ug/L**	**99**	**SW846 8260B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	107	(70 - 130)
1,2-Dichloroethane-d4	88	(70 - 130)
Toluene-d8	105	(70 - 130)
Dibromofluoromethane	97	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: G5J070276 **Work Order #...:** HM2P71AC-LCS **Matrix.....:** WATER
LCS Lot-Sample#: G5J190000-173 HM2P71AD-LCSD
Prep Date.....: 10/18/05 **Analysis Date..:** 10/18/05
Prep Batch #...: 5292173
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzene	**97**	**(80 - 120)**			**SW846 8260B**
	105	**(80 - 120)**	**7.8**	**(0-30)**	**SW846 8260B**
1,1-Dichloroethene	**89**	**(80 - 120)**			**SW846 8260B**
	102	**(80 - 120)**	**13**	**(0-30)**	**SW846 8260B**
Toluene	**102**	**(80 - 120)**			**SW846 8260B**
	108	**(80 - 120)**	**6.3**	**(0-30)**	**SW846 8260B**
Trichloroethene	**93**	**(80 - 120)**			**SW846 8260B**
	100	**(80 - 120)**	**7.2**	**(0-30)**	**SW846 8260B**
Chlorobenzene	**101**	**(80 - 120)**			**SW846 8260B**
	110	**(80 - 120)**	**8.2**	**(0-30)**	**SW846 8260B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	106	(70 - 130)
	109	(70 - 130)
1,2-Dichloroethane-d4	92	(70 - 130)
	93	(70 - 130)
Toluene-d8	109	(70 - 130)
	107	(70 - 130)
Dibromofluoromethane	99	(70 - 130)
	97	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: G5J070276 **Work Order #...:** HM2P71AC-LCS **Matrix.....:** WATER
LCS Lot-Sample#: G5J190000-173 HM2P71AD-LCSD
Prep Date.....: 10/18/05 **Analysis Date..:** 10/18/05
Prep Batch #...: 5292173
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Benzene	**20.0**	**19.5**	**ug/L**	**97**		**SW846 8260B**
	20.0	**21.0**	**ug/L**	**105**	**7.8**	**SW846 8260B**
1,1-Dichloroethene	**20.0**	**17.9**	**ug/L**	**89**		**SW846 8260B**
	20.0	**20.3**	**ug/L**	**102**	**13**	**SW846 8260B**
Toluene	**20.0**	**20.4**	**ug/L**	**102**		**SW846 8260B**
	20.0	**21.7**	**ug/L**	**108**	**6.3**	**SW846 8260B**
Trichloroethene	**20.0**	**18.7**	**ug/L**	**93**		**SW846 8260B**
	20.0	**20.1**	**ug/L**	**100**	**7.2**	**SW846 8260B**
Chlorobenzene	**20.0**	**20.3**	**ug/L**	**101**		**SW846 8260B**
	20.0	**22.0**	**ug/L**	**110**	**8.2**	**SW846 8260B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	106	(70 - 130)
	109	(70 - 130)
1,2-Dichloroethane-d4	92	(70 - 130)
	93	(70 - 130)
Toluene-d8	109	(70 - 130)
	107	(70 - 130)
Dibromofluoromethane	99	(70 - 130)
	97	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: G5J070276 **Work Order #...:** HM3AQ1AC-LCS **Matrix.....:** WATER
LCS Lot-Sample#: G5J190000-302 HM3AQ1AD-LCSD
Prep Date.....: 10/18/05 **Analysis Date..:** 10/18/05
Prep Batch #...: 5292302
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzene	**91**	**(80 - 120)**			**SW846 8260B**
	98	**(80 - 120)**	**7.8**	**(0-30)**	**SW846 8260B**
1,1-Dichloroethene	**80**	**(80 - 120)**			**SW846 8260B**
	96	**(80 - 120)**	**18**	**(0-30)**	**SW846 8260B**
Toluene	**93**	**(80 - 120)**			**SW846 8260B**
	101	**(80 - 120)**	**8.6**	**(0-30)**	**SW846 8260B**
Trichloroethene	**90**	**(80 - 120)**			**SW846 8260B**
	100	**(80 - 120)**	**9.9**	**(0-30)**	**SW846 8260B**
Chlorobenzene	**96**	**(80 - 120)**			**SW846 8260B**
	100	**(80 - 120)**	**3.6**	**(0-30)**	**SW846 8260B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	111	(70 - 130)
	116	(70 - 130)
1,2-Dichloroethane-d4	113	(70 - 130)
	117	(70 - 130)
Toluene-d8	117	(70 - 130)
	123	(70 - 130)
Dibromofluoromethane	114	(70 - 130)
	121	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: G5J070276 **Work Order #...:** HM3AQ1AC-LCS **Matrix.....:** WATER
LCS Lot-Sample#: G5J190000-302 HM3AQ1AD-LCSD
Prep Date.....: 10/18/05 **Analysis Date..:** 10/18/05
Prep Batch #...: 5292302
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Benzene	20.0	18.1	ug/L	91		SW846 8260B
	20.0	19.6	ug/L	98	7.8	SW846 8260B
1,1-Dichloroethene	20.0	15.9	ug/L	80		SW846 8260B
	20.0	19.1	ug/L	96	18	SW846 8260B
Toluene	20.0	18.5	ug/L	93		SW846 8260B
	20.0	20.2	ug/L	101	8.6	SW846 8260B
Trichloroethene	20.0	18.1	ug/L	90		SW846 8260B
	20.0	19.9	ug/L	100	9.9	SW846 8260B
Chlorobenzene	20.0	19.3	ug/L	96		SW846 8260B
	20.0	20.0	ug/L	100	3.6	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	111	(70 - 130)
	116	(70 - 130)
1,2-Dichloroethane-d4	113	(70 - 130)
	117	(70 - 130)
Toluene-d8	117	(70 - 130)
	123	(70 - 130)
Dibromofluoromethane	114	(70 - 130)
	121	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: G5J070276 **Work Order #...:** HL9L81AC-MS **Matrix.....:** WG
MS Lot-Sample #: G5J070276-007 HL9L81AD-MSD
Date Sampled...: 10/03/05 **Date Received..:** 10/06/05
Prep Date.....: 10/17/05 **Analysis Date..:** 10/17/05
Prep Batch #...: 5291444
Dilution Factor: 10

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzene	**108**	**(70 - 130)**			**SW846 8260B**
	110	**(70 - 130)**	**2.0**	**(0-30)**	**SW846 8260B**
1,1-Dichloroethene	**123**	**(70 - 130)**			**SW846 8260B**
	124	**(70 - 130)**	**1.6**	**(0-30)**	**SW846 8260B**
Toluene	**114**	**(70 - 130)**			**SW846 8260B**
	116	**(70 - 130)**	**1.5**	**(0-30)**	**SW846 8260B**
Trichloroethene	**103**	**(70 - 130)**			**SW846 8260B**
	105	**(70 - 130)**	**0.75**	**(0-30)**	**SW846 8260B**
Chlorobenzene	**111**	**(70 - 130)**			**SW846 8260B**
	113	**(70 - 130)**	**2.2**	**(0-30)**	**SW846 8260B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	104	(70 - 130)
	111	(70 - 130)
1,2-Dichloroethane-d4	85	(70 - 130)
	90	(70 - 130)
Toluene-d8	101	(70 - 130)
	104	(70 - 130)
Dibromofluoromethane	92	(70 - 130)
	96	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: G5J070276 **Work Order #...:** HL9L81AC-MS **Matrix.....:** WG
MS Lot-Sample #: G5J070276-007 HL9L81AD-MSD
Date Sampled...: 10/03/05 **Date Received..:** 10/06/05
Prep Date.....: 10/17/05 **Analysis Date..:** 10/17/05
Prep Batch #...: 5291444
Dilution Factor: 10

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzene	**ND**	**200**	**215**	**ug/L**	**108**		**SW846 8260B**
	ND	**200**	**220**	**ug/L**	**110**	**2.0**	**SW846 8260B**
1,1-Dichloroethene	**ND**	**200**	**245**	**ug/L**	**123**		**SW846 8260B**
	ND	**200**	**249**	**ug/L**	**124**	**1.6**	**SW846 8260B**
Toluene	**ND**	**200**	**228**	**ug/L**	**114**		**SW846 8260B**
	ND	**200**	**232**	**ug/L**	**116**	**1.5**	**SW846 8260B**
Trichloroethene	**280**	**200**	**489**	**ug/L**	**103**		**SW846 8260B**
	280	**200**	**493**	**ug/L**	**105**	**0.75**	**SW846 8260B**
Chlorobenzene	**ND**	**200**	**222**	**ug/L**	**111**		**SW846 8260B**
	ND	**200**	**227**	**ug/L**	**113**	**2.2**	**SW846 8260B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	104	(70 - 130)
	111	(70 - 130)
1,2-Dichloroethane-d4	85	(70 - 130)
	90	(70 - 130)
Toluene-d8	101	(70 - 130)
	104	(70 - 130)
Dibromofluoromethane	92	(70 - 130)
	96	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

AUTOMATED DATA REVIEW SUMMARY

Facility:	SWMU 58
Event:	2004_2005 SWMU 58 Phase II RFI GW
Contract:	9T9H213C
Sample Delivery Group:	G5J070276
Field Contractor:	Parsons Engineering Science, Salt Lake City
Laboratory Contractor:	SEVERN TRENT LABS., WEST SACRAMENTO, CA
Data Review Contractor:	Synectics, Sacramento, CA
Guidance Document:	*Final Phase II RCRA Facility Investigation SWMU-58 Workplan, December 2003*

Analytical Method	Normal Samples	Field QC Samples
SW8260B	18	2

This report assesses the analytical data quality associated with the analyses listed on the preceding cover page. This assessment has been made through a combination of automated data review (ADR) and supplemental manual review, the details of which are described below. The approach taken in the review of this data set is consistant with the requirements contained in Final Phase II RCRA Facility Investigation SWMU-58 Workplan, December 2003 to the extent possible. Where definitive guidance is not provided, data has been evaluated in a conservative manner using professional judgment. In cases where two qualifiers are listed as an action, such as "J/UJ", the first qualifier applies to positive results, and the second to non-detect results.

Samples were collected by Parsons Engineering Science, Salt Lake City; analyses were performed by SEVERN TRENT LABS., WEST SACRAMENTO, CA and were reported under sample delivery group (SDG) G5J070276. Results have been evaluated electronically using electronic data deliverables (EDDs) provided by the laboratory. The laboratory data summary forms (hard copy) have been reviewed during this effort and compared to the automated review output. Findings based on the automated data submission and manual data verification processes are detailed in the ADR narrative. The following quality control elements were evaluated during this review effort:

Technical Holding Times
Continuing Calibration Verification
Method Blank Contamination
Field Blank Contamination
Blank Spike Accuracy
Blank Spike Precision
Matrix Spike Accuracy
Matrix Spike Precision
Surrogate Recovery
Laboratory Duplicate Precision
Field Duplicate Precision

A minimum of ten percent of sample and QC results were manually evaluated for compliance with project specific requirements and consistency with hard copy results. The following reports were generated during the evaluation of this data set and are presented as attachments to this report as applicable.

Data Submission Warnings – Warnings encountered during the data submission process are evaluated and their affect on data quality is discussed in the narrative.

Batch – The analytical batch report is reviewed for completeness and compliance with project specific requirements. Incomplete or non-compliant run sequences are identified and their impact on data quality are discussed in the narrative.

QC Outlier – Results exceeding the evaluation criteria are reviewed for compliance with project requirements and a minimum of ten percent of the non-compliant QC values reported electronically are verified for consistency with hard-copy values.

Qualified Results – Qualified results are evaluated for compliance with project requirements and ten percent of qualified results are verified for consistency with the QC Outlier Report.

Field Duplicate – Field duplicate comparison results are evaluated for compliance with project requirements and ten percent of values reported are verified for consistency with the hard-copy data.

Rejected Results – All rejected results are evaluated for compliance with project requirements. The reason for rejection of the data is verified against hard copy data.

Analytical deficiencies, project non-compliance issues and inconsistencies with hard copy results observed during ADR evaluation process and their impact on data quality are summarized in the ADR narrative.

Out of control events experienced by the laboratory have warranted the qualification of 2.6% (11 results) and the rejection of 0 % (0 results) of the data set. These deficiencies are detailed in the referenced attachments, and discussed in the ADR narrative, where appropriate.

Released by

Date

Reason and Comment Codes

Code	Definition
C1	Diluted Out
C2	Flag Parent Only
C2S	Flag Parent (Soil); Batch (Water)
C3	No Action
C4	No QC Outliers
C5	One or both values <5x RL
C6	Recalculated Value
C7	Material Blanks
C8	Spike Insignificant
C9	No Flags; set to ND by method/cal. blank

Reasons

Code	Definition
A	Serial dilution
B	Calibration Blank - Negative
	Negative Blank
B1	Blank
B2	Calibration Blank
C	Continuing Calibration Verification
	Continuing Calibration Verification RRF
D	BS RPD
	Field Duplicate RPD
D1	Lab Replicate RPD
D2	MS RPD
E	Exceeds LinearCalibration Range
F	Hydrocarbon pattern does not match standard
G	Initial Calibration RRF
	Initial Calibration RSD
H	Test Hold Time
	Prep Hold Time
I	Internal standard
K1	Equip Blank
K2	Field Blank
K3	Trip Blank
L	LCS Recovery
M	MS Recovery
N	Blank - No Action
O	Interference check sample
P	Column RPD
Q	Material Blank
S	Surrogate
T	Receipt Temperature
TI	Tentatively Identified Compound
TR	Trace Level Detect
W	Column breakdown (pesticides)
X	Raised reporting limit
Y	Analyte not confirmed on second column

ADR CASE NARRATIVE

Laboratory ID: G5J070276

Prior to loading and processing data, modifications to the project setup may be requested by the laboratory and/or contractor, and approved by the client. These modifications allow the loading of data that was not in complete agreement with the project guidance document; in some cases, variances to the project document may be in process, in others, the changes are required to accept data that had not been generated in compliance with the project guidance document. All project setup modifications are listed below:

There were no project setup modifications associated with this sample delivery group.

Chemistry Data Quality

The data submission process incorporates a series of stored procedures designed to identify conditions in electronic data deliverables (EDD) that would affect chemistry data quality. These conditions will not result in the qualification of the data; however, these findings should be reviewed for possible contractual non-compliance. A brief explanation of each finding encountered for this data set and the potential impact on chemistry data quality is summarized below.

There were no issues affecting chemistry data quality associated with this sample delivery group.

Data Verification

The data verification process includes a manual review of information on the chains of custody and laboratory case narratives, a check of all rejected results and a minimum of 10 percent of sample and QC results for consistency with hard copy reports, and a cursory review of all reports generated during the automated review process. The following comments are associated with the verification process:

1. **Volatiles by SW8260**

   An matrix spike (MS) was not provided on the EDD for the analytical batch for this SDG. No qualifiers have been applied on this basis.

   It was noted that the data flagging system could not determine the hold times for the reanalysis of samples C-45FD001, C-45GW002, C-45GW003, C-48FGW001, C-48FGW002, C-48FGW003, and C-48FGW004 due to 2 sets of surrogates being provided for the same samples. The data was manually reviewed and the reanalysis were found to be outside project warning limits. TCE was flagged as estimated as seen in the Qualified Results report.

All of the reports utilized during the data verification process are provided as attachments to this report.

Batch Report

Facility: SWMU 58
Lab: SVLS
Filename: G5J070276
Status: Certified - 12/12/2005
User: BonnieMcNeill

Test Method: SW8260B
Leach Method: NONE

Test Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Test Date and Time	Sample Type
HP101018	NA	NA	LABQC	WQ		HSL020	10/18/2005 1:56:00PM	CV6
	5292302	NA	LABQC	WQ		G5J190000302	10/18/2005 3:31:00PM	BS1
	5292302	NA	LABQC	WQ		G5J190000302	10/18/2005 4:13:00PM	BD1
	5292302	NA	LABQC	WQ		G5J190000302	10/18/2005 5:14:00PM	LB1
	5292302	NA	D-18	WG	D-18GW009	G5J070276016	10/18/2005 5:48:00PM	N1
	5292302	NA	D-18	WG	D-18GW010	G5J070276017	10/18/2005 6:13:00PM	N1
	5292302	NA	D-18	WG	D-18GW011	G5J070276018	10/18/2005 6:37:00PM	N1
	5292302	NA	D-18	WG	D-18GW012	G5J070276019	10/18/2005 7:02:00PM	N1
HP71014	NA	NA	LABQC	WQ		LCS SS	10/14/2005 5:57:00PM	CV1
	NA	NA	LABQC	WQ		LCS SS	10/14/2005 5:57:00PM	CV3
HP71020	NA	NA	LABQC	WQ		HSL020	10/20/2005 11:23:00AM	CV2
	NA	NA	LABQC	WQ		HSL020	10/20/2005 11:23:00AM	CV7
	5340483	NA	LABQC	WQ		G5L060000483	10/20/2005 11:56:00AM	BS1
	5340483	NA	LABQC	WQ		G5L060000483	10/20/2005 11:56:00AM	BS1
	5340483	NA	LABQC	WQ		G5L060000483	10/20/2005 12:24:00PM	BD1
	5340483	NA	LABQC	WQ		G5L060000483	10/20/2005 12:24:00PM	BD1
	5340483	NA	LABQC	WQ		G5L060000483	10/20/2005 12:52:00PM	LB1
	5340483	NA	LABQC	WQ		G5L060000483	10/20/2005 12:52:00PM	LB1
	5340483	NA	C-45	WG	C-45FD001	G5J070276006	10/20/2005 1:47:00PM	FD1
	5340483	NA	C-45	WG	C-45GW002	G5J070276008	10/20/2005 2:15:00PM	N1
	5340483	NA	C-45	WG	C-45GW003	G5J070276009	10/20/2005 2:43:00PM	N1
	5340483	NA	C-48F	WG	C-48FGW004	G5J070276013	10/20/2005 3:11:00PM	N1
	5340483	NA	C-48F	WG	C-48FGW001	G5J070276010	10/20/2005 3:38:00PM	N1
	5340483	NA	C-48F	WG	C-48FGW002	G5J070276011	10/20/2005 4:06:00PM	N1
	5340483	NA	C-48F	WG	C-48FGW003	G5J070276012	10/20/2005 4:34:00PM	N1
HP91006	NA	NA	LABQC	WQ		LCS/SS	10/6/2005 6:22:00PM	CV1
	NA	NA	LABQC	WQ		LCS/SS	10/6/2005 6:45:00PM	CV2

Batch Report

Facility: SWMU 58
Lab: SVLS
Filename: G5J070276
Status: Certified - 12/12/2005
User: BonnieMcNeill

Test Method: SW8260B
Leach Method: NONE

Test Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Test Date and Time	Sample Type
HP91017	NA	NA	LABQC	WQ		HSL020	10/17/2005 12:00:00PM	CV4
	5291444	NA	LABQC	WQ		G5J180000444	10/17/2005 12:36:00PM	BS1
	5291444	NA	C-45	WG	C-45GW001	G5J070276007	10/17/2005 2:49:00PM	MS1
	5291444	NA	C-45	WG	C-45GW001	G5J070276007	10/17/2005 3:12:00PM	SD1
	5291444	NA	LABQC	WQ		G5J180000444	10/17/2005 3:58:00PM	LB1
	5291444	NA	C-45	WG	C-45GW001	G5J070276007	10/17/2005 4:20:00PM	N1
	5291444	NA	C-45	WG	C-45FD001	G5J070276006	10/17/2005 4:43:00PM	FD1
	5291444	NA	C-45	WG	C-45GW002	G5J070276008	10/17/2005 5:06:00PM	N1
	5291444	NA	C-45	WG	C-45GW003	G5J070276009	10/17/2005 5:29:00PM	N1
	5291444	NA	FIELDQC	WQ	PARSTB12	G5J070276020	10/17/2005 5:52:00PM	TB1
	5340483	NA	C-45	WG	C-45FD001	G5J070276006	10/20/2005 1:47:00PM	FD1
	5340483	NA	C-45	WG	C-45GW002	G5J070276008	10/20/2005 2:15:00PM	N1
	5340483	NA	C-45	WG	C-45GW003	G5J070276009	10/20/2005 2:43:00PM	N1
HP91018	NA	NA	LABQC	WQ		HSL020	10/18/2005 10:46:00AM	CV5
	5292173	NA	LABQC	WQ		G5J190000173	10/18/2005 11:20:00AM	BS1
	5292173	NA	LABQC	WQ		G5J190000173	10/18/2005 11:57:00AM	BD1
	5292173	NA	LABQC	WQ		G5J190000173	10/18/2005 12:43:00PM	LB1
	5292173	NA	D-19	WG	D-19FD001	G5J070276001	10/18/2005 4:46:00PM	N1
	5292173	NA	D-19	WG	D-19GW001	G5J070276002	10/18/2005 5:09:00PM	N1
	5292173	NA	D-19	WG	D-19GW002	G5J070276003	10/18/2005 5:32:00PM	N1
	5292173	NA	D-19	WG	D-19GW003	G5J070276004	10/18/2005 5:55:00PM	N1
	5292173	NA	D-17	WG	D-17GW001	G5J070276005	10/18/2005 6:18:00PM	N1
	5292173	NA	C-48F	WG	C-48FGW001	G5J070276010	10/18/2005 6:41:00PM	N1
	5292173	NA	C-48F	WG	C-48FGW002	G5J070276011	10/18/2005 7:03:00PM	N1
	5292173	NA	C-48F	WG	C-48FGW003	G5J070276012	10/18/2005 7:27:00PM	N1
	5292173	NA	C-48F	WG	C-48FGW004	G5J070276013	10/18/2005 7:49:00PM	N1
	5292173	NA	D-18	WG	D-18GW007	G5J070276014	10/18/2005 8:12:00PM	N1

Batch Report

Facility: SWMU 58
Lab: SVLS
Filename: G5J070276
Status: Certified - 12/12/2005
User: BonnieMcNeill

Test Method: SW8260B
Leach Method: NONE

Test Batch	Prep Batch	Leach Batch	Location	Matrix	Field Sample ID	Lab Sample ID	Test Date and Time	Sample Type
HP91018	5292173	NA	D-18	WG	D-18GW008	G5J070276015	10/18/2005 8:35:00PM	N1
	5340483	NA	C-48F	WG	C-48FGW004	G5J070276013	10/20/2005 3:11:00PM	N1
	5340483	NA	C-48F	WG	C-48FGW001	G5J070276010	10/20/2005 3:38:00PM	N1
	5340483	NA	C-48F	WG	C-48FGW002	G5J070276011	10/20/2005 4:06:00PM	N1
	5340483	NA	C-48F	WG	C-48FGW003	G5J070276012	10/20/2005 4:34:00PM	N1

QC Outliers

Facility: SWMU 58
Event: 2004_2005 SWMU 58 Phase II RFI GW
Reference: 9T9H213C

SDG G5J070276

Test/Leach	QCElement	Sample	Type	Dil'n	Analyte	Result	Units	Warning Limits	Control Limits	Qualifier	Reason	Cmnt.
SW8260B/NONE	Fld. RPD	C-45FD001	FD1	10.00	Trichloroethene (TCE)	38	RPD	<25	< 25	None	D	C2
SW8260B/NONE	LCS %R	P5292302LABQC	BS1	1.00	1,1-Dichloroethene	80	%	80 - 120	10 - 120	J / UJ	L	

Detected Results

Facility: SWMU 58
Event: 2004_2005 SWMU 58 Phase II RFI GW
Reference: ISSS-539-01

SDG: G5J070276

Volatile Organic Compounds by Capillary GC/MS

Test/Leach	Matrix	Field Sample ID	Type	Analyte	RL	Lab Result		Qualified Result		Units	Reason
SW8260B/NONE	WG	C-45FD001	FD	Carbon Tetrachloride	1.0	3.4		3.4		UG/L	
SW8260B/NONE	WG	C-45FD001	FD	Chloroform	1.0	0.32	J	0.32	J	UG/L	TR
SW8260B/NONE	WG	C-45FD001	FD	Trichloroethene (TCE)	10	190		190	J	UG/L	H
SW8260B/NONE	WG	C-45GW001	N	Carbon Tetrachloride	10	3.4	J	3.4	J	UG/L	TR
SW8260B/NONE	WG	C-45GW001	N	Trichloroethene (TCE)	10	280		280		UG/L	
SW8260B/NONE	WG	C-45GW002	N	Carbon Tetrachloride	1.0	3.2		3.2		UG/L	
SW8260B/NONE	WG	C-45GW002	N	Chloroform	1.0	0.35	J	0.35	J	UG/L	TR
SW8260B/NONE	WG	C-45GW002	N	Trichloroethene (TCE)	10	200		200	J	UG/L	H
SW8260B/NONE	WG	C-45GW003	N	Carbon Tetrachloride	1.0	3.0		3.0		UG/L	
SW8260B/NONE	WG	C-45GW003	N	Chloroform	1.0	0.29	J	0.29	J	UG/L	TR
SW8260B/NONE	WG	C-45GW003	N	Trichloroethene (TCE)	10	180		180	J	UG/L	H
SW8260B/NONE	WG	C-48FGW001	N	1,1-Dichloroethene	1.0	1.2		1.2		UG/L	
SW8260B/NONE	WG	C-48FGW001	N	Carbon Tetrachloride	1.0	0.39	J	0.39	J	UG/L	TR
SW8260B/NONE	WG	C-48FGW001	N	Chloroform	1.0	0.63	J	0.63	J	UG/L	TR
SW8260B/NONE	WG	C-48FGW001	N	cis-1,2-Dichloroethylene	1.0	0.10	J	0.10	J	UG/L	TR
SW8260B/NONE	WG	C-48FGW001	N	Trichloroethene (TCE)	20	360		360	J	UG/L	H
SW8260B/NONE	WG	C-48FGW002	N	1,1-Dichloroethene	1.0	1.1		1.1		UG/L	
SW8260B/NONE	WG	C-48FGW002	N	Carbon Tetrachloride	1.0	0.44	J	0.44	J	UG/L	TR
SW8260B/NONE	WG	C-48FGW002	N	Chloroform	1.0	0.48	J	0.48	J	UG/L	TR
SW8260B/NONE	WG	C-48FGW002	N	Trichloroethene (TCE)	20	340		340	J	UG/L	H
SW8260B/NONE	WG	C-48FGW003	N	1,1-Dichloroethene	1.0	1.1		1.1		UG/L	
SW8260B/NONE	WG	C-48FGW003	N	Carbon Tetrachloride	1.0	0.33	J	0.33	J	UG/L	TR
SW8260B/NONE	WG	C-48FGW003	N	Chloroform	1.0	0.50	J	0.50	J	UG/L	TR
SW8260B/NONE	WG	C-48FGW003	N	cis-1,2-Dichloroethylene	1.0	0.12	J	0.12	J	UG/L	TR
SW8260B/NONE	WG	C-48FGW003	N	Trichloroethene (TCE)	20	320		320	J	UG/L	H
SW8260B/NONE	WG	C-48FGW004	N	1,1-Dichloroethane	1.0	0.13	J	0.13	J	UG/L	TR
SW8260B/NONE	WG	C-48FGW004	N	1,1-Dichloroethene	1.0	1.2		1.2		UG/L	

SDG: G5J070276

Volatile Organic Compounds by Capillary GC/MS

Test/Leach	Matrix	Field Sample ID	Type	Analyte	RL	Lab Result		Qualified Result		Units	Reason
SW8260B/NONE	WG	C-48FGW004	N	Carbon Tetrachloride	1.0	0.36	J	0.36	J	UG/L	TR
SW8260B/NONE	WG	C-48FGW004	N	Chloroform	1.0	0.56	J	0.56	J	UG/L	TR
SW8260B/NONE	WG	C-48FGW004	N	cis-1,2-Dichloroethylene	1.0	0.18	J	0.18	J	UG/L	TR
SW8260B/NONE	WG	C-48FGW004	N	Trichloroethene (TCE)	10	300		300	J	UG/L	H
SW8260B/NONE	WG	D-17GW001	N	Carbon Tetrachloride	1.0	0.43	J	0.43	J	UG/L	TR
SW8260B/NONE	WG	D-17GW001	N	Chloroform	1.0	0.18	J	0.18	J	UG/L	TR
SW8260B/NONE	WG	D-17GW001	N	Trichloroethene (TCE)	1.0	3.8		3.8		UG/L	
SW8260B/NONE	WG	D-18GW007	N	Trichloroethene (TCE)	1.0	5.0		5.0		UG/L	
SW8260B/NONE	WG	D-18GW008	N	Trichloroethene (TCE)	1.0	4.4		4.4		UG/L	
SW8260B/NONE	WG	D-18GW009	N	Carbon Tetrachloride	1.0	0.15	J	0.15	J	UG/L	TR
SW8260B/NONE	WG	D-18GW009	N	Trichloroethene (TCE)	1.0	3.9		3.9		UG/L	
SW8260B/NONE	WG	D-18GW010	N	Trichloroethene (TCE)	1.0	3.7		3.7		UG/L	
SW8260B/NONE	WG	D-18GW011	N	Carbon Tetrachloride	1.0	0.16	J	0.16	J	UG/L	TR
SW8260B/NONE	WG	D-18GW011	N	Trichloroethene (TCE)	1.0	3.8		3.8		UG/L	
SW8260B/NONE	WG	D-18GW012	N	Trichloroethene (TCE)	1.0	3.8		3.8		UG/L	
SW8260B/NONE	WG	D-19FD001	N	Carbon Tetrachloride	1.0	0.66	J	0.66	J	UG/L	TR
SW8260B/NONE	WG	D-19FD001	N	Chloroform	1.0	0.22	J	0.22	J	UG/L	TR
SW8260B/NONE	WG	D-19FD001	N	Trichloroethene (TCE)	1.0	5.9		5.9		UG/L	
SW8260B/NONE	WG	D-19GW001	N	Carbon Tetrachloride	1.0	0.57	J	0.57	J	UG/L	TR
SW8260B/NONE	WG	D-19GW001	N	Chloroform	1.0	0.25	J	0.25	J	UG/L	TR
SW8260B/NONE	WG	D-19GW001	N	Trichloroethene (TCE)	1.0	6.0		6.0		UG/L	
SW8260B/NONE	WG	D-19GW002	N	Carbon Tetrachloride	1.0	0.76	J	0.76	J	UG/L	TR
SW8260B/NONE	WG	D-19GW002	N	Chloroform	1.0	0.20	J	0.20	J	UG/L	TR
SW8260B/NONE	WG	D-19GW002	N	Trichloroethene (TCE)	1.0	6.3		6.3		UG/L	
SW8260B/NONE	WG	D-19GW003	N	Carbon Tetrachloride	1.0	0.73	J	0.73	J	UG/L	TR
SW8260B/NONE	WG	D-19GW003	N	Chloroform	1.0	0.23	J	0.23	J	UG/L	TR
SW8260B/NONE	WG	D-19GW003	N	Trichloroethene (TCE)	1.0	6.6		6.6		UG/L	

Qualified Results

Facility: SWMU 58
Event: 2004_2005 SWMU 58 Phase II RFI GW
Reference: ISSS-539-01

SDG: G5J070276

Volatile Organic Compounds by Capillary GC/MS

Test/Leach	Matrix	Field Sample ID	Type	Analyte	RL	Lab Result		Qualified Result		Units	Reason
SW8260B/NONE	WG	C-45FD001	FD	Chloroform	1.0	0.32	J	0.32	J	UG/L	TR
SW8260B/NONE	WG	C-45FD001	FD	Trichloroethene (TCE)	10	190		190	J	UG/L	H
SW8260B/NONE	WG	C-45GW001	N	Carbon Tetrachloride	10	3.4	J	3.4	J	UG/L	TR
SW8260B/NONE	WG	C-45GW002	N	Chloroform	1.0	0.35	J	0.35	J	UG/L	TR
SW8260B/NONE	WG	C-45GW002	N	Trichloroethene (TCE)	10	200		200	J	UG/L	H
SW8260B/NONE	WG	C-45GW003	N	Chloroform	1.0	0.29	J	0.29	J	UG/L	TR
SW8260B/NONE	WG	C-45GW003	N	Trichloroethene (TCE)	10	180		180	J	UG/L	H
SW8260B/NONE	WG	C-48FGW001	N	Carbon Tetrachloride	1.0	0.39	J	0.39	J	UG/L	TR
SW8260B/NONE	WG	C-48FGW001	N	Chloroform	1.0	0.63	J	0.63	J	UG/L	TR
SW8260B/NONE	WG	C-48FGW001	N	cis-1,2-Dichloroethylene	1.0	0.10	J	0.10	J	UG/L	TR
SW8260B/NONE	WG	C-48FGW001	N	Trichloroethene (TCE)	20	360		360	J	UG/L	H
SW8260B/NONE	WG	C-48FGW002	N	Carbon Tetrachloride	1.0	0.44	J	0.44	J	UG/L	TR
SW8260B/NONE	WG	C-48FGW002	N	Chloroform	1.0	0.48	J	0.48	J	UG/L	TR
SW8260B/NONE	WG	C-48FGW002	N	Trichloroethene (TCE)	20	340		340	J	UG/L	H
SW8260B/NONE	WG	C-48FGW003	N	Carbon Tetrachloride	1.0	0.33	J	0.33	J	UG/L	TR
SW8260B/NONE	WG	C-48FGW003	N	Chloroform	1.0	0.50	J	0.50	J	UG/L	TR
SW8260B/NONE	WG	C-48FGW003	N	cis-1,2-Dichloroethylene	1.0	0.12	J	0.12	J	UG/L	TR
SW8260B/NONE	WG	C-48FGW003	N	Trichloroethene (TCE)	20	320		320	J	UG/L	H
SW8260B/NONE	WG	C-48FGW004	N	1,1-Dichloroethane	1.0	0.13	J	0.13	J	UG/L	TR
SW8260B/NONE	WG	C-48FGW004	N	Carbon Tetrachloride	1.0	0.36	J	0.36	J	UG/L	TR
SW8260B/NONE	WG	C-48FGW004	N	Chloroform	1.0	0.56	J	0.56	J	UG/L	TR
SW8260B/NONE	WG	C-48FGW004	N	cis-1,2-Dichloroethylene	1.0	0.18	J	0.18	J	UG/L	TR
SW8260B/NONE	WG	C-48FGW004	N	Trichloroethene (TCE)	10	300		300	J	UG/L	H
SW8260B/NONE	WG	D-17GW001	N	Carbon Tetrachloride	1.0	0.43	J	0.43	J	UG/L	TR
SW8260B/NONE	WG	D-17GW001	N	Chloroform	1.0	0.18	J	0.18	J	UG/L	TR
SW8260B/NONE	WG	D-18GW009	N	1,1-Dichloroethene	1.0	1.0	U	1.0	UJ	UG/L	L
SW8260B/NONE	WG	D-18GW009	N	Carbon Tetrachloride	1.0	0.15	J	0.15	J	UG/L	TR

SDG: G5J070276

Volatile Organic Compounds by Capillary GC/MS

Test/Leach	Matrix	Field Sample ID	Type	Analyte	RL	Lab Result		Qualified Result		Units	Reason
SW8260B/NONE	WG	D-18GW010	N	1,1-Dichloroethene	1.0	1.0	U	1.0	UJ	UG/L	L
SW8260B/NONE	WG	D-18GW011	N	1,1-Dichloroethene	1.0	1.0	U	1.0	UJ	UG/L	L
SW8260B/NONE	WG	D-18GW011	N	Carbon Tetrachloride	1.0	0.16	J	0.16	J	UG/L	TR
SW8260B/NONE	WG	D-18GW012	N	1,1-Dichloroethene	1.0	1.0	U	1.0	UJ	UG/L	L
SW8260B/NONE	WG	D-19FD001	N	Carbon Tetrachloride	1.0	0.66	J	0.66	J	UG/L	TR
SW8260B/NONE	WG	D-19FD001	N	Chloroform	1.0	0.22	J	0.22	J	UG/L	TR
SW8260B/NONE	WG	D-19GW001	N	Carbon Tetrachloride	1.0	0.57	J	0.57	J	UG/L	TR
SW8260B/NONE	WG	D-19GW001	N	Chloroform	1.0	0.25	J	0.25	J	UG/L	TR
SW8260B/NONE	WG	D-19GW002	N	Carbon Tetrachloride	1.0	0.76	J	0.76	J	UG/L	TR
SW8260B/NONE	WG	D-19GW002	N	Chloroform	1.0	0.20	J	0.20	J	UG/L	TR
SW8260B/NONE	WG	D-19GW003	N	Carbon Tetrachloride	1.0	0.73	J	0.73	J	UG/L	TR
SW8260B/NONE	WG	D-19GW003	N	Chloroform	1.0	0.23	J	0.23	J	UG/L	TR

DATA MANAGEMENT NARRATIVE

Laboratory ID: G5J070276

Data Submission

The data submission process incorporates a series of stored procedures designed to identify valid value (VVL), logical (LE), and project specific errors (PSE) in electronic data deliverables (EDD). Automated data review (ADR) is most efficient when data generators correct all errors. Dependent primarily upon the electronic reporting capabilities of the data generator, the severity of the logical and project specific errors listed below have been reduced to warnings. A warning log is generated with each data submission and is presented as an attachment to this report. A brief explanation of each error encountered for this data set and the potential impact on data quality is summarized below.

1. **Logical Error (LE) spLE01_ANADATE_Unique**
   This logical error occurs when multiple analyses are submitted within the same analytical batch that have identical analysis dates and times. This occurs in the laboratory when instruments are able to perform analyses in less than one minute, as ERPIMS specification records time only to the minute. However, it can also occur if the time of analysis is not recorded by an instrument, and the laboratory analyst reports all measurements in a batch with the same time. Whenever possible, actual times of analysis should be recorded and reported.

2. **Project Specific Error (PSE) spPSE01L_Invalid_Units_QC**
   This PSE occurs when laboratory quality control samples are reported with units of percent as opposed to true values. This inconsistency does not affect data quality, unless the submittal is scheduled for delivery to the AFCEE in accordance with the ERPIMS 4.0 specification. Automated data review can be performed for laboratory QC when units are reported in percent or in concentration units. However, to avoid this warning on future submittals, the laboratory would need to report these values in units of concentration (i.e., ug/L).

3. **Logical Error (LE) spLE01_QAPPFLAGS_F**
   This LE warning occurs when there are positive results less than the RL and associated QAPPFLAGS are not “F”. This requirement is only necessary if the project is an AFCEE project or if the data is to be submitted to ERPIMS. To avoid this warning in the future, apply QAPPFLAGS of “F” whenever the detected result is less than the RL.

4. **Valid Value List (VVL) spVVL32_LABLOTCTL**
   This warning occurs when the laboratory does not include the preparation batch number (LABLOTCTL). The LABLOTCTL field should be populated with the same ID for all field and QC samples extracted/prepared in the same batch. To avoid this warning on future submittals, populate the LABLOTCTL field.

5. **Valid Value List (VVL) spVVL33_CALREFID**
   This valid value warning occurs when the laboratory does not include the calibration reference ID (CALREFID). To avoid this warning in the future, the laboratory should include the CALREFID on the electronic data.

6. **Valid Value List (VVL) spVVL56_QAPPFLAGS**
   This valid value warning occurs when there are QAPPFLAGS in the file that are not official AFCEE qualifiers. Using the official AFCEE qualifiers is necessary only if the project is an AFCEE project or if the data is to be submitted to ERPIMS. To avoid this warning in the future, apply only AFCEE qualifiers to the QAPPFLAGS field.

A detailed description of the stored procedures utilized during the data submission process is provided as an attachment to this report (Submission Warnings).

Submission Warnings

Facility: SWMU 58
Data Generator: SVLS
File Name: N:\Temp Data\Parsons\Tooelle\G5J070276\G5J070276.txt

---

LE

Query Name	Finding	Record Count
spLE01_ANADATE_Unique	ANMCODE is SW8260B; ANADATE is Oct 20 2005 11:23AM; ANALOT is HP71020	2
	ANMCODE is SW8260B; ANADATE is Oct 14 2005 5:57PM; ANALOT is HP71014	2

PSE

Query Name	Finding	Record Count
spPSE01L_Invalid_Units_QC	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is N/STD; UNITS is percent	87
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is BD/STD; UNITS is percent	9
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is MS/STD; UNITS is percent	3
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is FD/STD; UNITS is percent	12
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is SD/STD; UNITS is percent	3
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is CV/ORG; UNITS is PERCENT	106
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is CV/STD; UNITS is percent	27
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is BS/STD; UNITS is percent	12
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is TB/STD; UNITS is percent	3
	ANMCODE is SW8260B; LCHMETH is NONE; Matrix Class is W; SACODE/PRCCODE is LB/STD; UNITS is percent	12

VVL

Query Name	Finding	Record Count
spLE01_QAPPFLAGS_F	PARVQ is TR; PARVAL is 0.3300; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 3.4000; RL is 10.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.1200; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.5600; RL is 1.0000; QAPPFLAGS is J	1

Submission Warnings

Facility: SWMU 58
Data Generator: SVLS
File Name: N:\Temp Data\Parsons\Tooelle\G5J070276\G5J070276.txt

---

VVL

Query Name	Finding	Record Count
spLE01_QAPPFLAGS_F	PARVQ is TR; PARVAL is 0.1500; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.3500; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.3900; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.2300; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.7600; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.2900; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.6600; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.3200; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.4300; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.7300; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.2500; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.1300; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.5000; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.1600; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.5700; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.6300; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.3600; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.1000; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.4800; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.2000; RL is 1.0000; QAPPFLAGS is J	1
	PARVQ is TR; PARVAL is 0.2200; RL is 1.0000; QAPPFLAGS is J	1

Submission Warnings

Facility: SWMU 58
Data Generator: SVLS
File Name: N:\Temp Data\Parsons\Tooelle\G5J070276\G5J070276.txt

VVL

Query Name	Finding	Record Count
spLE01_QAPPFLAGS_F	PARVQ is TR; PARVAL is 0.1800; RL is 1.0000; QAPPFLAGS is J	2
	PARVQ is TR; PARVAL is 0.4400; RL is 1.0000; QAPPFLAGS is J	1
spVVL32_LABLOTCTL	LABLOTCTL is Null	133
spVVL33_CALREFID	CALREFID is Null	655
spVVL56_QAPPFLAGS	QAPPFLAGS is Uq	1

Total Record Count: 788
Error Count: 0
Warning Count: 1,103

APPENDIX G

PARSONS

406 West South Jordan Parkway, Suite 300 • South Jordan, Utah 84095 • (801) 572-5999 • Fax (801) 572-9069

Memorandum

To: Dean Reynolds, TEAD; Larry McFarland, TEAD

Copy: Maryellen Mackenzie, USACE; Carl Cole, USACE; Doug Mackenzie, USACE; Richard Jirik, Parsons; Kurt Alloway, Parsons

From: Amanda Evans, Parsons

Date: Wednesday, July 27, 2005

Subject: TEAD SWMU-58 RFI – Waste Management

This letter is to recommend disposition of the waste soil in PARSNZ0518001 , PARSNZ0518002, PARSNZ0518003, PA RSNZ0518005, PARSNZ0518006, and PARSN0518008 in six 55 gallon drums as detailed in Table One, attached. The waste was generated in association with well D-17. Also the disposition of the waste soil in PARSNZ0518701 through PARSNZ0518710 in ten 55 gallon drums as detailed in Table Two, attached. The waste was generated in association with well D-18.

The soils were sampled as IDW54 and IDW55 respectively and tested for TCLP VOCs. Analysis was conducted by Severn Trent Services, Inc, West Sacramento, CA. This laboratory is Utah Certified.

Results have been received as an analyti cal report and quality control (QC) summary. Parsons has reviewed the data and found the QC to be acceptable. The complete report is attached.

Listed Wastes Analysis:

No constituents were detected.

Therefore it is recommended that waste be treated as non-hazardous with respect to listed codes.

Characteristic Wastes Analysis:

The waste is known to be primarily soil. Therefore generator's reasonable knowledge may be used to exclude the characteristics of ignitability, reactivity and corrosivity.

No constituents were detected. Therefore no characteristi c waste codes (40 CFR Part 261.24) should be applied.

Land Disposal Restrictions Analysis:

No constituents were detected (40 CFR Part 268.48), therefore LDRs do not apply.

{

Disposition:

Recommendations for disposal of the soil are to dispose at the drill sites from which the soil originated on the ground around the monitoring well. Parsons will arrange to dispose of the waste per your written instructions.

{

TABLE ONE

ContainerID	Owner	Sample?	Sample Comment	ContainerSize	Source	Contents	Open Date	Close Date	AccumulationStart Date	DispositionDue	Determination	Disposition	DispositionDate
PARSNZ051800_1	KLA	YES		55 GAL	D-17	SOIL	6/29/2005	6/29/2005	6/29/2005	9/17/20 05			

Sites	Location	Move Date	Manifest ID	Manifest Date
D-17	UID-90	6/30/2005	P0007	6/30/2005
	D-17	6/29/2005		

ContainerID	Owner	Sample?	Sample Comment	ContainerSize	Source	Contents	Open Date	Close Date	AccumulationStart Date	DispositionDue	Determination	Disposition	DispositionDate
PARSNZ051800_2	KLA	YES		55 GAL	D-17	SOIL	6/29/2005	6/29/2005	6/29/2005	9/17/20 05			

Sites	Location	Move Date	Manifest ID	Manifest Date
D-17	UID-90	6/30/2005	P5007	6/30/2005
	D-17	6/29/2005		

ContainerID	Owner	Sample?	Sample Comment	ContainerSize	Source	Contents	Open Date	Close Date	AccumulationStart Date	DispositionDue	Determination	Disposition	DispositionDate
PARSNZ051800_3	KLA	YES	WORK_PLAN	55 GAL	D-17	SOIL	6/29/2005	6/29/2005	6/29/2005	9/17/20 05			

Sites	Location	Move Date	Manifest ID	Manifest Date
D-17	UID-90	6/30/2005	P5007	6/30/2005
	D-17	6/29/2005		

ContainerID	Owner	Sample?	Sample Comment	ContainerSize	Source	Contents	Open Date	Close Date	AccumulationStart Date	DispositionDue	Determination	Disposition	DispositionDate
PARSNZ051800_5	KLA	YES	WORK_PLAN	55 GAL	D-17	SOIL	6/29/2005	6/29/2005	6/29/2005	9/17/20 05			

Sites	Location	Move Date	Manifest ID	Manifest Date
D-17	UID-90	6/30/2005	P5007	6/30/2005
	D-17	6/29/2005		

ContainerID	Owner	Sample?	Sample Comment	ContainerSize	Source	Contents	Open Date	Close Date	AccumulationStart Date	DispositionDue	Determination	Disposition	DispositionDate
PARSNZ051800_6	KLA	YES	WORK_PLAN	55 GAL	D-17	SOIL	6/29/2005	6/29/2005	6/29/2005	9/17/20 05			

Sites	Location	Move Date	Manifest ID	Manifest Date
D-17	UID-90	6/30/2005	P5007	6/30/2005
	D-17	6/30/2005		

ContainerID	Owner	Sample?	Sample Comment	ContainerSize	Source	Contents	Open Date	Close Date	AccumulationStart Date	Disposition Due	Determination	Disposition	Disposition Date
PARSNZ051800 8	KLA	YES	WORK_PLAN	55 GAL	D-17	SOIL	6/29/2005	6/29/2005	6/29/2005	9/17/20 05			

Sites	Location	Move Date	Manifest ID	Manifest Date
D-17	UID-90	6/30/2005	P5007	6/30/2005
	D-17	6/29/2005		

From: "McFarland, Larry" <larry.mcfarland@us.army.mil>
To: "Matt Ivers (Kleinfelder)" <rivers@kleinfelder.com>
Date: 12/1/2005 3:27 PM
Subject: FW: SWMU 58 IDW

-----Original Message-----
From: McFarland, Larry
Sent: Monday, August 01, 2005 9:14 AM
To: Alloway, Kurt; Jirik, Richard (Parsons); Evans, Amanda
Cc: Reynolds, Dean (Environmental)
Subject: SWMU 58 IDW

The Tooele Army Depot (TEAD) Environmental Office has reviewed your memorandum dated July 27, 2005 concerning the recommended disposition of Investigative Derived Waste (IDW) which has been characterized for disposal through sample numbers IDW54 and IDW55. TEAD concurs with Parsons recommended disposition. Based on the analysis provided, the soil cuttings contained in the following containers should be returned to the point of generation (monitoring wells D-17 and D-18), and spread on the surface surrounding the respective monitoring well.

PARSNZ0518001 @ D-17
PARSNZ0518002 @ D-17
PARSNZ0518003 @ D-17
PARSNZ0518005 @ D-17
PARSNZ0518006 @ D-17
PARSNZ0518008 @ D-17

PARSNZ0518701 @ D-18
PARSNZ0518702 @ D-18
PARSNZ0518703 @ D-18
PARSNZ0818704 @ D-18
PARSNZ0818705 @ D-18
PARSNZ0818706 @ D-18
PARSNZ0818707 @ D-18
PARSNZ0818708 @ D-18
PARSNZ0818709 @ D-18
PARSNZ0818710 @ D-18

Thanks
Larry McFarland
Environmental Office, SJMTE-CS-EO
1 Tooele Army Depot, Building 8
Tooele, Utah 84074-5003
Phone (435) 833-3235 Fax (435) 833-2839
larry.mcfarland@us.army.mil
mcfarlal@emh2.tooele.army.mil

SEVERN TRENT STL

STL Sacramento
880 Riverside Parkway
West Sacramento, CA 95605

Tel: 916 373 5600 Fax: 916 372 1059
www.stl-inc.com

July 25, 2005

STL SACRAMENTO PROJECT NUMBER: G5G140257
PO/CONTRACT: 744139-30012

Jan Barbas
Parsons
406 West South Jordan Parkway
Suite 300
South Jordan, UT 84095

Dear Mr. Barbas,

This report contains the analytical results for the samples received under chain of custody by STL Sacramento on July 14, 2005. These samples are associated with your Tooelle Industrial Area project.

The test results in this report meet all NELAC requirements for parameters that accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The case narrative is an integral part of this report.

Preliminary results were sent via e-mail on February 25, 2005.

If you have any questions, please feel free to call me at (916) 374-4427.

Sincerely,

Nilo Ligi
Project Manager

TABLE OF CONTENTS

STL SACRAMENTO PROJECT NUMBER G5G140257

CASE NARRATIVE

STL SACRAMENTO PROJECT NUMBER G5G140257

General Comments
Sample: 1, 2
Samples were received in good condition at STL Sacramento at 3 degrees C. Sample was shipped to STL North Canton where it was received on 7/15/05 at 2.2 degrees C.

SOLID, SW 1311/8260B, TCLP/Volatile Organics
Sample(s): 1, 2
Samples were analysed by method SW 1311/8260B, a TCLP extraction followed by gas chromatography/mass spectrometry (GCMS) analysis. All QA/QC criteria were met.

There were no anomalies associated with this project.

SEVERN TRENT STL

ACCREDITED IN ACCORDANCE WITH nelac

STL Sacramento Certifications/Accreditations

Certifying State	Certificate #	Certifying State	Certificate #
Alaska	UST-055	Oregon*	CA 200005
Arizona	AZ0616	Pennsylvania	68-1272
Arkansas	04-067-0	South Carolina	87014002
California*	01119CA	Texas	TX 270-2004A
Colorado	NA	Utah*	QUAN1
Connecticut	PH-0691	Virginia	00178
Florida*	E87570	Washington	C087
Georgia	960	West Virginia	9930C, 334
Hawaii	NA	Wisconsin	998204680
Louisiana*	01944	NFESC	NA
Michigan	9947	USACE	NA
Nevada	CA44	USDA Foreign Plant	37-82605
New Jersey*	CA005	USDA Foreign Soil	S-46613
New York*	11666		

*NELAP accredited. A more detailed parameter list is available upon request. Update 1/27/05

QC Parameter Definitions

QC Batch: The QC batch consists of a set of up to 20 field samples that behave similarly (i.e., same matrix) and are processed using the same procedures, reagents, and standards at the same time.

Method Blank: An analytical control consisting of all reagents, which may include internal standards and surrogates, and is carried through the entire analytical procedure. The method blank is used to define the level of laboratory background contamination.

Laboratory Control Sample and Laboratory Control Sample Duplicate (LCS/LCSD): An aliquot of blank matrix spiked with known amounts of representative target analytes. The LCS (and LCSD as required) is carried through the entire analytical process and is used to monitor the accuracy of the analytical process independent of potential matrix effects. If an LCSD is performed, it may also used to evaluate the precision of the process.

Duplicate Sample (DU): Different aliquots of the same sample are analyzed to evaluate the precision of an analysis.

Surrogates: Organic compounds not expected to be detected in field samples, which behave similarly to target analytes. These are added to every sample within a batch at a known concentration to determine the efficiency of the sample preparation and analytical process.

Matrix Spike and Matrix Spike Duplicate (MS/MSD): An MS is an aliquot of a matrix fortified with known quantities of specific compounds and subjected to an entire analytical procedure in order to indicate the appropriateness of the method for a particular matrix. The percent recovery for the respective compound(s) is then calculated. The MSD is a second aliquot of the same matrix as the matrix spike, also spiked, in order to determine the precision of the method.

Isotope Dilution: For isotope dilution methods, isotopically labeled analogs (internal standards) of the native target analytes are spiked into the sample at time of extraction. These internal standards are used for quantitation, and monitor and correct for matrix effects. Since matrix effects on method performance can be judged by the recovery of these analogs, there is little added benefit of performing MS/MSD for these methods. MS/MSD are only performed for client or QAPP requirements.

Control Limits: The reported control limits are either based on laboratory historical data, method requirements, or project data quality objectives. The control limits represent the estimated uncertainty of the test results.

Sample Summary
G5G140257

WO#	Sample #	Client Sample ID	Sampling Date	Received Date
HFG4G	1	IDW54	7/6/2005 04:00 PM	7/14/2005 09:00 AM
HFG5N	2	IDW55	7/11/2005 04:15 PM	7/14/2005 09:00 AM

Notes(s):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity, pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight

GSG140257

CHAIN OF CUSTODY

PARSONS

COC ID: 982

Project Name:	Tooele Industrial Area	**Contractor:**	Parsons-SLC
Project Manager:	Ed Staes	**Installation:**	TEAD
Sample Coordinator:	Kurt Alloway	**Sample Program:**	

Parsons Point of Contact: Jan Barbas
406 W. South Jordan Parkway
Suite 300
South Jordan, Utah 84095
(801) 572-5999 FAX (801) 572-9069

Site ID	Location ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End. Depth	Total Conts.
	IDW54	IDW54	SD	G	N	1	06JUL2005	1600	KLA	0	150'	2

Analysis	Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot
TCLPVOC	SVLS					

Remarks: MONITOR WELL D-17
PARSN205 18001, 02, 03, 05, 06, 08

5 DAY TURN-AROUND REQUESTED

OV

Relinquished by (Signature)	Date/Time	Received by (Signature)	Date/Time
To FEDEX	13 JUL 2005 / 1630		7-14-05 930

To:STL Laboratories, 880 Riverside Pkwy, W. Sacramento, CA, 95605 (916) 373-5600 Wednesday, July 13, 2005 Page 1 of 1

STL-Sacramento (916) 373-5600

4 of 17

SEVERN TRENT **STL**

LOT RECEIPT CHECKLIST
STL Sacramento

CLIENT Parsons PM NL LOG # 33497

LOT# (QUANTIMS ID) G5G140257 QUOTE# 62837 LOCATION NC

		Initials	Date
DATE RECEIVED 7-14-05	TIME RECEIVED 900	CH	7-14-05

DELIVERED BY ☑ FEDEX ☐ CA OVERNIGHT ☐ CLIENT
☐ AIRBORNE ☐ GOLDENSTATE ☐ DHL
☐ UPS ☐ BAX GLOBAL ☐ GO-GETTERS
☐ STL COURIER ☐ COURIERS ON DEMAND
☐ OTHER

CUSTODY SEAL STATUS ☑ INTACT ☐ BROKEN ☐ N/A

CUSTODY SEAL #(S) Seal

SHIPPPING CONTAINER(S) ☐ STL ☑ CLIENT ☐ N/A

TEMPERTURE RECORD (IN °C) IR 1☐ 3☑ ☐ OTHER

COC #(S) 983, 982

TEMPERATURE BLANK Observed: N/A Corrected:

SAMPLE TEMPERATURE

Observed: 2 4 2 Average: 3 Corrected Average: 3

COLLECTOR'S NAME: ☐ Verified from COC ☑ Not on COC

pH MEASURED ☐ YES ☐ ANOMALY ☑ N/A

LABELED BY

LABELS CHECKED BY

PEER REVIEW ☑ NA

SHORT HOLD TEST NOTIFICATION

SAMPLE RECEIVING
WETCHEM ☑ N/A
VOA-ENCORES ☑ N/A

☐ METALS NOTIFIED OF FILTER/PRESERVE VIA VERBAL & EMAIL ☑ N/A

☑ COMPLETE SHIPMENT RECEIVED IN GOOD CONDITION WITH APPROPRIATE TEMPERATURES, CONTAINERS, PRESERVATIVES ☐ N/A

☐ Clouseau ☐ TEMPERATURE EXCEEDED (2 °C – 6 °C)*1 ☑ N/A

☐ WET ICE ☐ BLUE ICE ☐ GEL PACK ☐ NO COOLING AGENTS USED ☐ PM NOTIFIED

Notes:

*1 Acceptable temperature range for State of Wisconsin samples is ≤4°C.

G5G140257 LEAVE NO SPACES BLANK. USE "N/A" IF NOT APPLICABLE. DO NOT ALLOW ANY ALL "N/A" ENTRIES.

Severn Trent Laboratories, Inc
SAMPLE ANALYSIS REQUISITION

LABORATORY: STL N Canton
4101 Shuffel Drive NW
North Canton OH 44720,

NEED ANALYTICAL REPORT BY
7/18/05

MS
7/15/05

√AMS 7/18/05

ATTN:

LAB PURCHASE ORDER: SR070577

CLIENT CODE: 368391 PROJECT MANAGER: Nilo Ligi

Summary Sheets Printed

NUMBER OF SAMPLES IN LOT: 0002

SAMPLE I.D.	SAMPLING DATE	ANALYSIS REQUIRED	
G5G140257-001 HFG4G-1-AA	7/06/05	Volatile Organics, GC/MS (8260B) (MS8260TP) METHOD: 8260B	2x250 1
G5G140257-002 HFG5N-1-AA	7/11/05	Volatile Organics, GC/MS (8260B) (MS8260TP) METHOD: 8260B	

NEED DETECTION LIMIT AND ANALYSIS DATE INCLUDED IN REPORT.

SHIPPING METHOD: FEDEX DATE: 7/14/05

SEND REPORT TO: NILO LIGI

SAMPLE RECEIVED BY: _____ DATE: _____

PLEASE SEND A SIGNED COPY OF THIS FORM WITH REPORT AT COMPLETION OF ANALYSIS.

THANK YOU.

STL Sacramento
INT: _____ 7/14/05 13:48:53
STL N Canton
4101 Shuffel Drive NW
North Canton OH 44720,

RELINQUISHED BY: [signature] DATE/TIME: 7/14/05 16:20

RELINQUISHED BY: _____ DATE/TIME: _____

RECEIVED FOR LAB BY: Matthew C. Hilty DATE/TIME: 7/15/5, 9:40

PLEASE RETURN ORIGINAL SAMPLE ANALYSIS REQUISITION

STL Cooler Receipt Form/Narrative **Lot Number:** G5G140257
North Canton Facility

Client: STL - Sacramento Project: Quote#:
Cooler Received on: 7/15/5 Opened on: 7/15/5 by: (Signature)

Fedx ☑ Client Drop Off ☐ UPS ☐ DHL ☐ FAS ☐ Other:
STL Cooler No# Foam Box ☑ Client Cooler ☐ Other

1. Were custody seals on the outside of the cooler? Yes ☑ No ☐ Intact? Yes ☑ No ☐ NA ☐
   If YES, Quantity 1
   Were the custody seals signed and dated? Yes ☑ No ☐ NA ☐
2. Shipper's packing slip attached to this form? Yes ☑ No ☐ NA ☐
3. Did custody papers accompany the samples? Yes ☑ No ☐ Relinquished by client? Yes ☑ No ☐
4. Did you sign the custody papers in the appropriate place? Yes ☑ No ☐
5. Packing material used: Bubble Wrap ☑ Foam ☐ None ☐ Other:
6. Cooler temperature upon receipt 2.2 °C (see back of form for multiple coolers/temp)

METHOD: Temp Vial ☐ Coolant & Sample ☐ Against Bottles ☐ IR ☑ ICE/$H_2$0 Slurry ☐
COOLANT: Wet Ice ☑ Blue Ice ☐ Dry Ice ☐ Water ☐ None ☐

7. Did all bottles arrive in good condition (Unbroken)? Yes ☑ No ☐
8. Could all bottle labels and/or tags be reconciled with the COC? Yes ☑ No ☐
9. Were samples at the correct pH? (record below/on back) Yes ☐ No ☐ NA ☑
10. Were correct bottles used for the tests indicated? Yes ☑ No ☐
11. Were air bubbles >6 mm in any VOA vials? Yes ☐ No ☐ NA ☑
12. Sufficient quantity received to perform indicated analyses? Yes ☑ No ☐

Contacted PM Date: by: via Voice Mail ☐ Verbal ☐ Other ☐
Concerning:

√	

1. CHAIN OF CUSTODY

The following discrepancies occurred:

2. SAMPLE CONDITION

Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.

3. SAMPLE PRESERVATION

Sample(s) were further preserved in sample receiving to meet recommended pH level(s). *Nitric Acid Lot # 051105-HNO3; Sulfuric Acid Lot # 102804-H2SO4; Sodium Hydroxide Lot # -041305 -NaOH; Hydrochloric Acid Lot # 100504-HCl; Sodium Hydroxide and Zinc Acetate Lot # 071604-CH3COO2ZN/NaOH*
Sample(s) were received with bubble > 6 mm in diameter (cc: PM)

4. Other (see below or back)

Client ID	pH	Date	Initials

SOP: NC-SC-0005, Sample Receiving
N:\QAQC\NARRATIV\STL\Cooler Receipt STL\COOLER_STL_Rev49 062205.doc

SOLID, 8260B, Vol. Org.
TCLP NCanton

Parsons Corporation

Client Sample ID: IDW54

TCLP GC/MS Volatiles

Lot-Sample #...: G5G140257-001 Work Order #...: HFG4G1AA Matrix.....: SD
Date Sampled...: 07/06/05 Date Received..: 07/14/05
Leach Date.....: 07/18/05 Prep Date.....: 07/19/05 Analysis Date..: 07/19/05
Leach Batch #..: P519902 Prep Batch #...: 5200677
Dilution Factor: 1

Method.....: SW846 8260B

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Benzene	ND	0.025	mg/L	0.00023
Carbon tetrachloride	ND	0.025	mg/L	0.00045
Chlorobenzene	ND	0.025	mg/L	0.00028
Chloroform	ND	0.025	mg/L	0.00040
1,2-Dichloroethane	ND	0.025	mg/L	0.00048
1,1-Dichloroethylene	ND	0.070	mg/L	0.00060
Methyl ethyl ketone	ND	0.25	mg/L	0.0010
Tetrachloroethylene	ND	0.070	mg/L	0.00083
Trichloroethylene	ND	0.050	mg/L	0.00041
Vinyl chloride	ND	0.025	mg/L	0.00044

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	95	(86 - 125)
1,2-Dichloroethane-d4	88	(80 - 122)
Toluene-d8	95	(90 - 122)
4-Bromofluorobenzene	94	(84 - 125)

NOTE(S):

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311

Parsons Corporation

Client Sample ID: IDW55

TCLP GC/MS Volatiles

Lot-Sample #...: G5G140257-002 Work Order #...: HFG5N1AA Matrix.....: SD
Date Sampled...: 07/11/05 Date Received..: 07/14/05
Leach Date.....: 07/18/05 Prep Date.....: 07/19/05 Analysis Date..: 07/19/05
Leach Batch #..: P519902 Prep Batch #...: 5200677
Dilution Factor: 1
Method.....: SW846 8260B

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Benzene	ND	0.025	mg/L	0.00023
Carbon tetrachloride	ND	0.025	mg/L	0.00045
Chlorobenzene	ND	0.025	mg/L	0.00028
Chloroform	ND	0.025	mg/L	0.00040
1,2-Dichloroethane	ND	0.025	mg/L	0.00048
1,1-Dichloroethylene	ND	0.070	mg/L	0.00060
Methyl ethyl ketone	ND	0.25	mg/L	0.0010
Tetrachloroethylene	ND	0.070	mg/L	0.00083
Trichloroethylene	ND	0.050	mg/L	0.00041
Vinyl chloride	ND	0.025	mg/L	0.00044

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	96	(86 - 125)
1,2-Dichloroethane-d4	90	(80 - 122)
Toluene-d8	100	(90 - 122)
4-Bromofluorobenzene	103	(84 - 125)

NOTE(S):

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311

QC DATA ASSOCIATION SUMMARY

G5G140257

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	SD	SW846 8260B	P519902	5200677	5200350
002	SD	SW846 8260B	P519902	5200677	5200350

METHOD BLANK REPORT

TCLP GC/MS Volatiles

Client Lot #...: G5G140257 **Work Order #...:** HFPE71AA **Matrix.....:** SOLID
MB Lot-Sample #: A5G180000-269
Leach Date.....: 07/18/05 **Prep Date.....:** 07/19/05 **Analysis Date..:** 07/19/05
Leach Batch #..: P519902 **Prep Batch #...:** 5200677
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Benzene	ND	0.025	mg/L	SW846 8260B
Carbon tetrachloride	ND	0.025	mg/L	SW846 8260B
Chlorobenzene	ND	0.025	mg/L	SW846 8260B
Chloroform	ND	0.025	mg/L	SW846 8260B
1,2-Dichloroethane	ND	0.025	mg/L	SW846 8260B
1,1-Dichloroethylene	ND	0.070	mg/L	SW846 8260B
Methyl ethyl ketone	ND	0.25	mg/L	SW846 8260B
Tetrachloroethylene	ND	0.070	mg/L	SW846 8260B
Trichloroethylene	ND	0.050	mg/L	SW846 8260B
Vinyl chloride	ND	0.025	mg/L	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	92	(86 - 125)
1,2-Dichloroethane-d4	88	(80 - 122)
Toluene-d8	96	(90 - 122)
4-Bromofluorobenzene	98	(84 - 125)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: G5G140257 **Work Order #...:** HFTX31AA **Matrix.....:** SOLID
LCS Lot-Sample#: A5G190000-677
Prep Date.....: 07/19/05 **Analysis Date..:** 07/19/05
Prep Batch #...: 5200677
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Benzene	**98**	**(76 - 118)**	**SW846 8260B**
Chlorobenzene	**99**	**(76 - 113)**	**SW846 8260B**
1,1-Dichloroethylene	**97**	**(67 - 128)**	**SW846 8260B**
Trichloroethylene	**98**	**(76 - 119)**	**SW846 8260B**
Toluene	**99**	**(72 - 117)**	**SW846 8260B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	97	(86 - 124)
1,2-Dichloroethane-d4	90	(80 - 122)
Toluene-d8	99	(90 - 122)
4-Bromofluorobenzene	100	(84 - 125)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: G5G140257 **Work Order #...:** HFTX31AA **Matrix.....:** SOLID
LCS Lot-Sample#: A5G190000-677
Prep Date.....: 07/19/05 **Analysis Date..:** 07/19/05
Prep Batch #...: 5200677
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD
Benzene	**0.500**	**0.488**	**mg/L**	**98**	**SW846 8260B**
Chlorobenzene	**0.500**	**0.496**	**mg/L**	**99**	**SW846 8260B**
1,1-Dichloroethylene	**0.500**	**0.485**	**mg/L**	**97**	**SW846 8260B**
Trichloroethylene	**0.500**	**0.488**	**mg/L**	**98**	**SW846 8260B**
Toluene	**0.500**	**0.495**	**mg/L**	**99**	**SW846 8260B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	97	(86 - 124)
1,2-Dichloroethane-d4	90	(80 - 122)
Toluene-d8	99	(90 - 122)
4-Bromofluorobenzene	100	(84 - 125)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

TCLP GC/MS Volatiles

Client Lot #...: G5G140257 **Work Order #...:** HFKHW1AQ-MS **Matrix.....:** SOLID
MS Lot-Sample #: A5G150189-001 HFKHW1AR-MSD
Date Sampled...: 07/14/05 **Date Received..:** 07/15/05
Leach Date.....: 07/18/05 **Prep Date.....:** 07/19/05 **Analysis Date..:** 07/19/05
Leach Batch #..: P519902 **Prep Batch #...:** 5200677
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Benzene	**99**	**(76 - 117)**			**SW846 8260B**
	97	**(76 - 117)**	**2.4**	**(0-30)**	**SW846 8260B**
Chlorobenzene	**101**	**(72 - 114)**			**SW846 8260B**
	101	**(72 - 114)**	**0.27**	**(0-30)**	**SW846 8260B**
1,1-Dichloroethylene	**100**	**(67 - 129)**			**SW846 8260B**
	100	**(67 - 129)**	**0.49**	**(0-30)**	**SW846 8260B**
Trichloroethylene	**103**	**(72 - 121)**			**SW846 8260B**
	103	**(72 - 121)**	**0.12**	**(0-30)**	**SW846 8260B**
Toluene	**100**	**(67 - 113)**			**SW846 8260B**
	99	**(67 - 113)**	**0.52**	**(0-30)**	**SW846 8260B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	96	(86 - 125)
	97	(86 - 125)
1,2-Dichloroethane-d4	95	(80 - 122)
	95	(80 - 122)
Toluene-d8	100	(90 - 122)
	101	(90 - 122)
4-Bromofluorobenzene	104	(84 - 125)
	108	(84 - 125)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE DATA REPORT

TCLP GC/MS Volatiles

Client Lot #...: G5G140257 **Work Order #...:** HFKHW1AQ-MS **Matrix.....:** SOLID
MS Lot-Sample #: A5G150189-001 HFKHW1AR-MSD
Date Sampled...: 07/14/05 **Date Received..:** 07/15/05
Leach Date.....: 07/18/05 **Prep Date.....:** 07/19/05 **Analysis Date..:** 07/19/05
Leach Batch #..: P519902 **Prep Batch #...:** 5200677
Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD
Benzene	**ND**	**0.500**	**0.497**	**mg/L**	**99**		**SW846 8260B**
	ND	**0.500**	**0.486**	**mg/L**	**97**	**2.4**	**SW846 8260B**
Chlorobenzene	**ND**	**0.500**	**0.505**	**mg/L**	**101**		**SW846 8260B**
	ND	**0.500**	**0.506**	**mg/L**	**101**	**0.27**	**SW846 8260B**
1,1-Dichloroethylene	**ND**	**0.500**	**0.500**	**mg/L**	**100**		**SW846 8260B**
	ND	**0.500**	**0.502**	**mg/L**	**100**	**0.49**	**SW846 8260B**
Trichloroethylene	**ND**	**0.500**	**0.513**	**mg/L**	**103**		**SW846 8260B**
	ND	**0.500**	**0.513**	**mg/L**	**103**	**0.12**	**SW846 8260B**
Toluene	**ND**	**0.500**	**0.499**	**mg/L**	**100**		**SW846 8260B**
	ND	**0.500**	**0.496**	**mg/L**	**99**	**0.52**	**SW846 8260B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
Dibromofluoromethane	96	(86 - 125)
	97	(86 - 125)
1,2-Dichloroethane-d4	95	(80 - 122)
	95	(80 - 122)
Toluene-d8	100	(90 - 122)
	101	(90 - 122)
4-Bromofluorobenzene	104	(84 - 125)
	108	(84 - 125)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

APPENDIX H

PARSONS

406 West South Jordan Parkway, Suite 300 • South Jordan, Utah 84095 • (801) 572-5999 • Fax (801) 572-9069

Memorandum

To: Dean Reynolds, TEAD; Larry McFarland, TEAD

Copy: Maryellen Mackenzie, USACE; Carl Cole, USACE; Doug Mackenzie, USACE; Richard Jirik, Parsons; Kurt Alloway, Parsons

From: Amanda Evans, Parsons

Date: Thursday, August 4, 2005

Subject: TEAD SWMU-58 RFI – Waste Management

This letter is to recommend disposition of the waste equipment rinsate and drill produced water in Baker Tank PARSNZ0518101 as detailed in Table One, attached.

The equipment rinsate and drill produced water was sampled as IDW57 and tested for VOCs. Analysis was conducted by Severn Trent Services, Inc, West Sacramento, CA. This laboratory is Utah Certified.

Results have been received as an analytical report and quality control (QC). Parsons has reviewed the data and found the QC to be acceptable. The complete report is attached.

Listed Wastes Analysis:

Carbon tetrachloride was detected at 0.35 ug/L and trichloroethylene at 0.41 ug/L. Therefore it is recommended that the waste be treated as hazardous and coded F001 and F002. Also, chloroform was detected at 0.18 ug/L. No additional waste codes are recommended due to chloroform.

Characteristic Wastes Analysis:

The waste is known to be primarily water. Therefore generator's reasonable knowledge may be used to exclude the characteristics of ignitability, reactivity and corrosivity.

No analytes were detected in excess of TCLP limits. Therefore no characteristic waste codes (40 CFR Part 261.24) should be applied.

Land Disposal Restrictions Analysis:

No compounds were detected in excess of LDR limits for wastewater (40 CFR Part 268.48), therefore the waste is suitable for land disposal.

{

Disposition:

It is recommended that the equipment rinsate and drill produced water be disposed in TEAD's groundwater treatment plant. Parsons will arrange to dispose of the waste per your written instructions.

{

Table One

ContainerID	Owner	Sample?	Sample Comment	Container Size	Source	Contents	Open Date	Close Date	Accumulation Start Date	Disposition Due	Determination	Disposition	Disposition Date
PARSNZ051810_1	KLA	YES		6500 GAL	D-17, D-18, D-19	RINSE/DECON WATER/DRILL PRODUCED WATER	6/30/2005	7/21/2005	6/30/2005	9/18/20 05			

Sites	Location	Move Date	Manifest ID	Manifest Date
D-17	UID-90	6/30/2005		
D-18				
D-19				

From: McFarland, Larry [mailto:larry.mcfarland@us.army.mil]
Sent: Mon 8/8/2005 1:48 PM
To: Evans, Amanda
Cc: Alloway, Kurt; Kubacki, Steve; Jirik, Richard; Reynolds, Dean (Environmental)
Subject: RE: TEAD IDW Report for IDW57

Amanda,

The Tooele Army Depot (TEAD) Environmental Office has reviewed your memorandum dated August 4, 2005 concerning the recommended disposition of Investigative Derived Waste (IDW) which has been characterized for disposal through sample number IDW57. TEAD concurs with Parsons recommended disposition. Based on the analysis provided, contaminants detected in the decon and development water contained in baker tank # PARSNZ0518101 may be disposed of at Tooele Army Depots Ground Water Treatment System. At your earliest convienience, please make arrangements with the treatment plant operations contractor to dispose of the water.

Thanks
Larry McFarland

-----Original Message-----
From: Evans, Amanda [mailto:Amanda.Evans@parsons.com]
Sent: Thursday, August 04, 2005 1:33 PM
To: Kurt.Alloway@parsons.com; colec@emh2.tooele.army.mil; doug.d.mackenzie@usace.army.mil; Richard.Jirik@parsons.com; Maryellen.Mackenzie@usace.army.mil; mcfarlal@emh2.tooele.army.mil; reynoldd@emh2.tooele.army.mil
Subject: TEAD IDW Report for IDW57

Hello,

You will find attached the report for IDW57. Please contact me if you have any questions or comments.

Thank you,

Amanda M. Evans
Chemist
parsons
406 West South Jordan Parkway, Suite 300
South Jordan, UT 84095
(801)553-3366
(801)572-9069 Fax
<<AME_idw57.pdf>>

SEVERN TRENT STL

STL Sacramento
880 Riverside Parkway
West Sacramento, CA 95605

Tel: 916 373 5600 Fax: 916 372 1059
www.stl-inc.com

July 29, 2005

STL SACRAMENTO PROJECT NUMBER: G5G270244
PO/CONTRACT: 744139-30012

Jan Barbas
Parsons
406 West South Jordan Parkway
Suite 300
South Jordan, UT 84095

Dear Mr. Barbas,

This report contains the analytical results for the sample received under chain of custody by STL Sacramento on July 27, 2005. This sample is associated with your Tooelle Industrial Area project.

The test results in this report meet all NELAC requirements for parameters that accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The case narrative is an integral part of this report.

Preliminary results were sent via e-mail on July 29, 2005.

If you have any questions, please feel free to call me at (916) 374-4427.

Sincerely,

Nilo Ligi
Project Manager

TABLE OF CONTENTS

STL SACRAMENTO PROJECT NUMBER G5G270244

CASE NARRATIVE

STL SACRAMENTO PROJECT NUMBER G5G270244

General Comments

Sample: 1

Sample was received in good condition at STL Sacramento at 2 degrees C.

Sample was received with a pH of 8. As the sample was analyzed within 7 days (the normal holding time for an unpreserved sample), there is no impact on the data.

SOLID, SW 8260B, Volatile Organics

Sample(s): 1

Sample was analysed by method SW 8260B, gas chromatography/mass spectrometry (GCMS) analysis. All QA/QC criteria were met except as noted below.

Naphthalene we detected in the Method Blank below the reporting limit but above the MDL. This compound was not detected in the sample.

Sample(s): 1

Insufficient volume was available for MS/MSD. An LCS/DCS was prepared instead.

There were no other anomalies associated with this project.

G5G270244

Sacra

SEVERN TRENT **STL**

ACCREDITED IN ACCORDANCE WITH nelac

STL Sacramento Certifications/Accreditations

Certifying State	Certificate #	Certifying State	Certificate #
Alaska	UST-055	Oregon*	CA 200005
Arizona*	AZ0616	Pennsylvania	68-1272
Arkansas	04-067-0	South Carolina	87014002
California*	01119CA	Texas	TX 270-2004A
Colorado	NA	Utah*	QUAN1
Connecticut	PH-0691	Virginia	00178
Florida*	E87570	Washington	C087
Georgia*	960	West Virginia	9950C, 334
Hawaii	NA	Wisconsin	998204680
Louisiana*	01947	NRESC	NA
Michigan	9947	USACE	NA
Nevada*	CA44	USDA Foreign Plant	37582605
New Jersey*	CA005	USDA Foreign Soil	S-46613
New York*	11666		

*NELAP accredited. A more detailed parameter list is available upon request. Update 1/27/05

QC Parameter Definitions

QC Batch: The QC batch consists of a set of up to 20 field samples that behave similarly (i.e., same matrix) and are processed using the same procedures, reagents, and standards at the same time.

Method Blank: An analytical control consisting of all reagents, which may include internal standards and surrogates, and is carried through the entire analytical procedure. The method blank is used to define the level of laboratory background contamination.

Laboratory Control Sample and Laboratory Control Sample Duplicate (LCS/LCSD): An aliquot of blank matrix spiked with known amounts of representative target analytes. The LCS (and LCSD as required) is carried through the entire analytical process and is used to monitor the accuracy of the analytical process independent of potential matrix effects. If an LCSD is performed, it may also used to evaluate the precision of the process.

Duplicate Sample (DU): Different aliquots of the same sample are analyzed to evaluate the precision of an analysis.

Surrogates: Organic compounds not expected to be detected in field samples, which behave similarly to target analytes. These are added to every sample within a batch at a known concentration to determine the efficiency of the sample preparation and analytical process.

Matrix Spike and Matrix Spike Duplicate (MS/MSD): An MS is an aliquot of a matrix fortified with known quantities of specific compounds and subjected to an entire analytical procedure in order to indicate the appropriateness of the method for a particular matrix. The percent recovery for the respective compound(s) is then calculated. The MSD is a second aliquot of the same matrix as the matrix spike, also spiked, in order to determine the precision of the method.

Isotope Dilution: For isotope dilution methods, isotopically labeled analogs (internal standards) of the
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of these
ogs, there is
added
forming M
methods.
MS/MSD are only performed fo
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Control Limits: The repor
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G5GZL

Sample Summary
G5G270244

WO#	Sample #	Client Sample ID	Sampling Date	Received Date
HGC7Q	1	IDW57	7/25/2005 04:00 PM	7/27/2005 09:00 AM

Notes(s):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity, pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight

G5G270244

Sacra

CHAIN OF CUSTODY

COC ID:

Project Name:	Tooele Industrial Area	Contractor:	Parsons-SLC
Project Manager:	Ed Staes	Installation:	TEAD
Sample Coordinator:	Kurt Alloway	Sample Program:	

Parsons Point of Contact: Jan Barbas
406 W. South Jordan Parkway
Suite 300
South Jordan, Utah 84095
(801) 572-5999 FAX (801) 572-9069

Site ID	Loc ID	Sample ID	Matrix	Method	Type	Sample No.	Log Date	Log Time	Logged By	Beg. Depth	End. Depth	Total Conts.
	ID	IDW57	WW	G	N	1	25-JUL-2005	1600	KLA	—	—	3
	Analysis	Lab	Cooler	No. Conts	AB Lot	EB Lot	TB Lot	Remarks:				
		SVLS										

PARSNZ05181O1
D-17, 18, 19 D&W/DECON WATER

5-DAY TURN AROUND REQUESTED

RECEIVED IN GOOD CONDITION
UNDER COC
JUL 27 2005
INI:

Relinquished by (Signature)		Date/Time	Received by (Signature)	Date/Time
	FedEx	26 JUL 05 / 1500		7/27/05 11:37

To:STL Laboratories, 880 Riverside Pkwy, W. Sacramento, CA, 95605 (916) 373-5600

Monday, July 25, 2005

SEVERN TRENT **STL**

LOT RECEIPT CHECKLIST
STL Sacramento

CLIENT Pardon P PM NL LOG # _____

LOT# (QUANTIMS ID) G5627024 QUOTE# 47837 LOCATION VB

		Initials	Date
DATE RECEIVED	7/27/05 TIME RECEIVED 9:00	MM	7/27/05

DELIVERED BY ☑ FEDEX ☐ CA OVERNIGHT ☐ CLIENT
☐ AIRBORNE ☐ GOLDENSTATE ☐ DHL
☐ UPS ☐ BAX GLOBAL ☐ GO-GETTERS
☐ STL COURIER ☐ COURIERS ON DEMAND
☐ OTHER

CUSTODY SEAL STATUS ☑ INTACT ☐ BROKEN ☐ N/A

CUSTODY SEAL #(S) N/A

SHIPPPING CONTAINER(S) ☐ STL ☐ CLIENT ☑ N/A

TEMPERTURE RECORD (IN °C) IR 1☐ 3☑ ☐ OTHER _____

COC #(S) N/A

TEMPERATURE BLANK Observed: N/A Corrected: N/A

SAMPLE TEMPERATURE
Observed: 2 2 2 Average: 2 Corrected Average: N/A

COLLECTOR'S NAME: ☐ Verified from COC ☑ Not on COC

pH MEASURED ☐ YES ☐ ANOMALY ☑ N/A

LABELED BY.....

LABELS CHECKED BY.....

PEER REVIEW _____ ☑ NA

SHORT HOLD TEST NOTIFICATION

SAMPLE RECEIVING
WETCHEM ☑ N/A
VOA-ENCORES ☑ N/A

☐ METALS NOTIFIED OF FILTER/PRESERVE VIA VERBAL & EMAIL ☑ N/A

☑ COMPLETE SHIPMENT RECEIVED IN GOOD CONDITION WITH ☐ N/A
APPROPRIATE TEMPERATURES,

☐ Bluseau ☐ TEMPERATURE EXCEEDED (2 - 6 ☐ N/A

☐ WET ICE ☐ BLUE ☐ NO COOLING AGENTS U ☐ PM FIED

Comments:

*1 Acceptable temperature range for ... of Wisconsin samples is ≤ ...
LEAVE BLANK. USE "N/A" ... Sacramento ... KIES

G5627

WATER, 8260B, Volatile Organics

G5GT2L

Parsons Corporation

Client Sample ID: IDW57

GC/MS Volatiles

Lot-Sample #...: G5G270244-001 **Work Order #...:** HGC7Q1AA **Matrix.....:** WATER
Date Sampled...: 07/25/05 **Date Received..:** 07/27/05
Prep Date.....: 07/27/05 **Analysis Date..:** 07/27/05
Prep Batch #...: 5209199
Dilution Factor: 1 **Method.....:** SW846 8260B

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Benzene	ND	1.0	ug/L	0.13
Carbon tetrachloride	**0.35 J**	**1.0**	**ug/L**	**0.15**
Chloroethane	ND	1.0	ug/L	0.34
Chloroform	**0.18 J**	**1.0**	**ug/L**	**0.12**
1,1-Dichloroethane	ND	1.0	ug/L	0.10
1,2-Dichloroethane	ND	1.0	ug/L	0.22
cis-1,2-Dichloroethene	ND	1.0	ug/L	0.10
trans-1,2-Dichloroethene	ND	1.0	ug/L	0.11
1,1-Dichloroethene	ND	1.0	ug/L	0.36
1,2-Dichloropropane	ND	1.0	ug/L	0.15
Ethylbenzene	ND	1.0	ug/L	0.27
Methylene chloride	ND	2.0	ug/L	0.35
Naphthalene	ND	1.0	ug/L	0.15
Tetrachloroethene	ND	1.0	ug/L	0.38
Toluene	ND	1.0	ug/L	0.25
1,1,1-Trichloroethane	ND	1.0	ug/L	0.41
1,1,2-Trichloroethane	ND	1.0	ug/L	0.31
Trichloroethene	**0.41 J**	**1.0**	**ug/L**	**0.31**
Vinyl chloride	ND	1.0	ug/L	0.12
m-Xylene & p-Xylene	ND	1.0	ug/L	0.18
o-Xylene	ND	1.0	ug/L	0.10

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	99	(70 - 130)
1,2-Dichloroethane-d4	107	(70 - 130)
Toluene-d8	110	(70 - 130)
Dibromofluoromethane	110	(70 - 130)

NOTE(S):

J Estimated result. Result is less than RL.

QC DATA ASSOCIATION SUMMARY

G5G270244

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 8260B		5209199	

G5G270244

Sacra

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: G5G270244 **Work Order #...:** HGFJW1AA **Matrix.....:** WATER
MB Lot-Sample #: G5G280000-199

Prep Date.....: 07/27/05
Analysis Date..: 07/27/05 **Prep Batch #...:** 5209199
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Benzene	ND	1.0	ug/L	SW846 8260B
Carbon tetrachloride	ND	1.0	ug/L	SW846 8260B
Chloroethane	ND	1.0	ug/L	SW846 8260B
Chloroform	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethane	ND	1.0	ug/L	SW846 8260B
1,2-Dichloroethane	ND	1.0	ug/L	SW846 8260B
1,1-Dichloroethene	ND	1.0	ug/L	SW846 8260B
cis-1,2-Dichloroethene	ND	1.0	ug/L	SW846 8260B
trans-1,2-Dichloroethene	ND	1.0	ug/L	SW846 8260B
1,2-Dichloropropane	ND	1.0	ug/L	SW846 8260B
Ethylbenzene	ND	1.0	ug/L	SW846 8260B
Methylene chloride	ND	2.0	ug/L	SW846 8260B
Naphthalene	**0.18 J**	**1.0**	**ug/L**	**SW846 8260B**
Tetrachloroethene	ND	1.0	ug/L	SW846 8260B
Toluene	ND	1.0	ug/L	SW846 8260B
1,1,1-Trichloroethane	ND	1.0	ug/L	SW846 8260B
1,1,2-Trichloroethane	ND	1.0	ug/L	SW846 8260B
Trichloroethene	ND	1.0	ug/L	SW846 8260B
Vinyl chloride	ND	1.0	ug/L	SW846 8260B
o-Xylene	ND	1.0	ug/L	SW846 8260B
m-Xylene & p-Xylene	ND	1.0	ug/L	SW846 8260B

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	99	(70 - 130)
1,2-Dichloroethane-d4	99	(70 - 130)
Toluene-d8	106	(70 - 130)
Dibromofluoromethane	103	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

J Estimated result. Result is less than RL.

LABORATORY CONTROL SAMPLE DATA REPORT

GC/MS Volatiles

Client Lot #...: G5G270244 **Work Order #...:** HGFJW1AC-LCS **Matrix.....:** WATER
LCS Lot-Sample#: G5G280000-199 HGFJW1AD-LCSD
Prep Date.....: 07/27/05 **Analysis Date..:** 07/27/05
Prep Batch #...: 5209199
Dilution Factor: 1

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RPD	METHOD
Chlorobenzene	**20.0**	**18.6**	**ug/L**	**93**		**SW846 8260B**
	20.0	**20.3**	**ug/L**	**102**	**9.0**	**SW846 8260B**
Benzene	**20.0**	**19.7**	**ug/L**	**99**		**SW846 8260B**
	20.0	**20.9**	**ug/L**	**104**	**5.8**	**SW846 8260B**
1,1-Dichloroethene	**20.0**	**19.6**	**ug/L**	**98**		**SW846 8260B**
	20.0	**22.2**	**ug/L**	**111**	**13**	**SW846 8260B**
Toluene	**20.0**	**19.5**	**ug/L**	**97**		**SW846 8260B**
	20.0	**21.2**	**ug/L**	**106**	**8.6**	**SW846 8260B**
Trichloroethene	**20.0**	**18.6**	**ug/L**	**93**		**SW846 8260B**
	20.0	**20.2**	**ug/L**	**101**	**8.3**	**SW846 8260B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	86	(70 - 130)
	97	(70 - 130)
1,2-Dichloroethane-d4	89	(70 - 130)
	97	(70 - 130)
Toluene-d8	95	(70 - 130)
	105	(70 - 130)
Dibromofluoromethane	93	(70 - 130)
	100	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

G5G270244

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: G5G270244 **Work Order #...:** HGFJW1AC-LCS **Matrix.....:** WATER
LCS Lot-Sample#: G5G280000-199 HGFJW1AD-LCSD
Prep Date.....: 07/27/05 **Analysis Date..:** 07/27/05
Prep Batch #...: 5209199
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Chlorobenzene	**93**	**(80 - 120)**			**SW846 8260B**
	102	**(80 - 120)**	**9.0**	**(0-30)**	**SW846 8260B**
Benzene	**99**	**(80 - 120)**			**SW846 8260B**
	104	**(80 - 120)**	**5.8**	**(0-30)**	**SW846 8260B**
1,1-Dichloroethene	**98**	**(80 - 120)**			**SW846 8260B**
	111	**(80 - 120)**	**13**	**(0-30)**	**SW846 8260B**
Toluene	**97**	**(80 - 120)**			**SW846 8260B**
	106	**(80 - 120)**	**8.6**	**(0-30)**	**SW846 8260B**
Trichloroethene	**93**	**(80 - 120)**			**SW846 8260B**
	101	**(80 - 120)**	**8.3**	**(0-30)**	**SW846 8260B**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	86	(70 - 130)
	97	(70 - 130)
1,2-Dichloroethane-d4	89	(70 - 130)
	97	(70 - 130)
Toluene-d8	95	(70 - 130)
	105	(70 - 130)
Dibromofluoromethane	93	(70 - 130)
	100	(70 - 130)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

HAZARDOUS WASTE MANIFEST

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Please print or type. (Form designed for use on elite (12-pitch) typewriter.) *Form Approved. OMB No. 2050-0039.*

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. UT3213820894 — Manifest Document No. P501O
2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

GENERATOR

3. Generator's Name and Mailing Address
TOOELE ARMY DEPOT ENVIRONMENTAL OFFICE, SJMTE-CS-EO
BUILDING 8, ATTN: DEAN REYNOLDS, TOOELE, UT 84074
4. Generator's Phone (435) 833-3504

A. State Manifest Document Number
B. State Generator's ID

5. Transporter 1 Company Name: MP ENVIRONMENTAL
6. US EPA ID Number: CAT000624247
C. State Transporter's ID
D. Transporter's Phone 435-843-7802

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
TOOELE ARMY DEPOT ENVIRONMENTAL OFFICE SJMTE-CS-EO
UTAH INDUSTRIAL DEPOT, JADE ST. AND B AVE
TOOELE, UT 84074
10. US EPA ID Number: UT3213820894
G. State Facility's ID
H. Facility's Phone 435-833-3504

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. HAZARDOUS WASTE LIQUID, NOS (TCE), 9 NA 3082, PG III		1	TT		EST P	
b.						
c.						
d.						

NEED TOTAL QUANTITY IN POUNDS

J. Additional Descriptions for Materials Listed Above
A. TRICHLOROETHYLENE
MONITORING WELL D-17 WATER PARSN20519401

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
EMERGENCY CONTACT-TOOELE ARMY DEPOT FIRE DEPARTMENT 435-833-2015

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; **OR**, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name | Signature | Month Day Year

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name | Signature | Month Day Year